# VERITAS NetBackup™ 4.5 for NDMP

## System Administrator's Guide

**for UNIX and Windows**

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VERITAS

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# Contents





# About This Guide

This guide explains how to install, configure, and use VERITAS NetBackup for NDMP (Network Data Management Protocol). In this guide, VERITAS NetBackup is referred to as NetBackup.

## Audience

This guide is intended for the system administrator responsible for installing, configuring, and using NetBackup for NDMP, and assumes a thorough working knowledge of how to administer both NetBackup and the NDMP host platform.

## Organization

- "Introduction to NetBackup for NDMP" is an overview of the NetBackup for NDM capabilities and includes an explanation of NDMP terminology.
- "Installing NetBackup for NDMP" explains installation prerequisites and how to install NetBackup for NDMP on Windows NT/2000 and UNIX hosts.
- "Configuring NetBackup for NDMP" explains how to configure your system to use NetBackup for NDMP. This chapter supplements the information in the *NetBackup System Administrator's Guides* (both Windows NT/2000 and UNIX).
- "Using NetBackup for NDMP" explains how to back up and restore NetBackup for NDMP policies, and includes a section on troubleshooting. This chapter supplements the information in the *NetBackup System Administrator's Guides* (both Windows NT/2000 and UNIX).
- "Remote NDMP" explains how to back up an NDMP host to a storage device locally attached to a NetBackup media server.
- "Using Scripts" describes template scripts that can be used for execution of a wide variety of tasks during backup.
- The "NetBackup for NDMP Commands" appendix describes the `set_ndmp_attr`, `ndmpmoveragent`, and `InstallNdmpMoverAgent` commands.



# Related Manuals

See the following manuals if you are using and administrating NetBackup for NDMP on a UNIX host:

- *NetBackup Release Notes for UNIX and Windows*

  Provides other important information such as the platforms and operating systems that are supported and operating notes that are not in the manuals.

- *NetBackup Media Manager Device Configuration Guide*

  Provides information about configuring storage devices on UNIX systems.

- *NetBackup System Administrator's Guide for UNIX*

  Explains how to configure and manage NetBackup.

- *NetBackup User's Guide for UNIX*

  Explains how to perform backups, restores, and archives.

- *NetBackup Media Manager System Administrator's Guide for UNIX*

  Explains how to configure and manage the storage devices and media that NetBackup servers use for backups.

- *NetBackup Troubleshooting Guide for UNIX*

  Provides troubleshooting information for the NetBackup product.

See the following manuals if you are using and administrating NetBackup for NDMP on a Windows NT/2000 host:

- *NetBackup Release Notes for UNIX and Windows*

  Provides important information about platforms and operating systems that are supported and operating notes that are not in the manuals.

- *NetBackup System Administrator's Guide for Windows*

  Explains how to configure and manage NetBackup.

- *NetBackup User's Guide for Windows*

  Explains how to perform backups, restores, and archives.

- *NetBackup Media Manager System Administrator's Guide for Windows*

  Explains how to configure and manage the storage devices and media that NetBackup servers use for backups.

- *NetBackup Troubleshooting Guide for Windows*

  Provides troubleshooting information for the NetBackup product.

For more information about NDMP, see the following web site: http://www.ndmp.org

# Accessibility

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:

- Support for assistive technologies such as screen readers and voice input (Windows servers only)
- Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For more information, see the NetBackup system administrator's guide.

# Conventions

The following explains typographical and other conventions used in this guide.

## Type Style

Typographic Conventions

| Typeface | Usage |
|---|---|
| **`Bold fixed width`** | Input. For example, type **`cd`** to change directories. |
| `Fixed width` | Paths, commands, filenames, or output. For example: The default installation directory is `/opt/VRTSxx`. |
| *Italics* | Book titles, new terms, or used for emphasis. For example: *Do not* ignore cautions. |
| *Sans serif* (italics) | Placeholder text or variables. For example: Replace *filename* with the name of your file. |
| **Serif** (no italics) | Graphical user interface (GUI) objects, such as fields, menu choices, etc.<br>For example: Enter your password in the **Password** field. |

## Notes and Cautions

**Note** This is a Note. Notes are used to call attention to information that makes using the product easier or helps in avoiding problems.



**Caution** This is a Caution. Cautions are used to warn about situations that could cause data loss.

## Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, holding down the **Ctrl** key while pressing another key. Keyboard command sequences are indicated by connecting the keys with a plus sign. For example:

Press Ctrl+t

## Command Usage

The following conventions are frequently used in the synopsis of command usage.

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

Separates optional arguments from which the user can choose. For example, when a command has the following format:

`command` *arg1*|*arg2*

the user can use either the *arg1* or *arg2* variable.

## Terms

The terms listed in the table below are used in the VERITAS NetBackup documentation to increase readability while maintaining technical accuracy.

| Term | Definition |
|---|---|
| Microsoft Windows, Windows | Terms used as nouns to describe a line of operating systems developed by Microsoft, Inc.<br><br>A term used as an adjective to describe a specific product or noun. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.<br><br>Where a specific Windows product is identified, then only that particular product is valid with regards to the instance in which it is being used.<br><br>For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at `http://www.support.veritas.com`. |
| Windows servers | A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and Windows 2000. |
| Windows clients | A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE. |

# Getting Help

For updated information about this product, including system requirements, supported platforms, supported peripherals, and a list of current patches available from Technical Support, visit our web site:

`http://www.support.veritas.com/`

VERITAS Customer Support has an extensive technical support structure that enables you to contact technical support teams that are trained to answer questions to specific products. You can contact Customer Support by sending an e-mail to support@veritas.com, or by finding a product-specific phone number from the VERITAS support web site. The following steps describe how to locate the proper phone number.



1. Open `http://www.support.veritas.com/` in your web browser.
2. Click **Contact Support**. The *Contacting Support Product List* page appears.
3. Select a product line and then a product from the lists that appear. The page will refresh with a list of technical support phone numbers that are specific to the product you just selected.

## NDMP Information on the Web

The VERITAS support web site has up-to-date information on NDMP supported operating systems and NAS vendors. It also contains configuration and troubleshooting help for particular NAS systems. To locate this information, do the following:

1. Go to `www.support.veritas.com` on the web.
2. In the left margin, click **Patches and Updates**.
3. Select **NetBackup Products** from the Product List, then select **NetBackup DataCenter** or **NetBackup BusinesServer**.
4. In the filter wizard, enter the following:
   - **Keyword**: NDMP
   - **File type**: PDF (or ALL)
   - **Language**: English
   - **Version**: 4.5
   - **Platform**: All
5. Click **Find Files**.

   The files relating to NetBackup for NDMP will be listed along with their descriptions. Do the following to download a file:

   a. Click on the file-name link for more information about the file.

   b. Right-click on the file's download link to download and save the file.

# Introduction to NetBackup for NDMP 1

NetBackup for NDMP is an optional application that enables NetBackup to use the Network Data Management Protocol (NDMP) to initialize and control backups and restores of Network Attached Storage (NAS) systems that support NDMP.

## NetBackup for NDMP Features

NetBackup for NDMP includes the following features:

- Support for NDMP version V2, V3, and V4
- Centralized backup-policy management

  Scheduling, catalog management, and other backup tasks are managed from a NetBackup master server. NetBackup for NDMP can be installed on a NetBackup master or media server.
- Device and media management

  NetBackup Media Manager software provides total management and control of the devices and media used for backups and restores of NDMP hosts.
- High speed local backup of an NDMP host

  Backup data travels between disk and tape drives that are directly attached to the same NDMP host. This provides high-speed backup without impairing network throughput.
- Backup of local-area-network attached NDMP host to a tape device on another NDMP host

  Backup data travels across the network, from a disk on an NDMP host to tape on another NDMP host. This is referred to as *three-way backup*. This data movement option requires NDMP hosts that support three-way backup.
- Backup of a network-attached NDMP host to a tape device on a NetBackup media server (a form of three-way backup called “remote NDMP”). This feature supports NDMP version V2 on the NetBackup media server, and versions V2, V3, and V4 on the NDMP hosts. Remote NDMP does not support Shared Storage Option (SSO).



- Shared robots

  Robots can be shared between NDMP hosts and NetBackup servers, or between multiple NDMP hosts. Robotic control can be on an NDMP host or on a NetBackup server.

  If the robot is a Tape Library DLT (TLD) or Tape Library 8MM (TL8) robot, some of the tape drives can attach to NDMP hosts and other drives can attach to NetBackup servers.

- Path-based history

  The NDMP server can send catalog information consisting of complete path names to NetBackup. This feature is not supported by all vendors. For up-to-date information on the vendors supporting path-based history, refer to "NDMP Information on the Web" on page xii.

- The ability to execute scripts during a backup

# NetBackup for NDMP Terminology

This section introduces NetBackup for NDMP terminology.

## NDMP (Network Data Management Protocol)

NDMP is a widely used protocol through which an NDMP-conformant backup application can control the backups and restores for an NDMP host.

## NDMP Host

An NDMP host is a NAS system that runs an NDMP server application to allow backup and restore.

These hosts are single-purpose products designed to provide fast, multi-protocol file access and cost effective data storage to workstations and servers in the network or across the Internet.

In a NetBackup configuration, the NDMP host is considered a client of NetBackup. However, NetBackup client software is not installed on an NDMP host.

## NDMP Server Application

An NDMP server application runs on an NDMP host and executes backup, restore, and device control commands that it receives from an NDMP-conformant backup application. The backup application (NetBackup) is considered an NDMP client.

A separate instance of an NDMP server process exists for each connection to an NDMP client. That is, if two backups are in progress, an NDMP server process exists for each backup.

## NDMP Client

An NDMP client is an NDMP-compliant backup application that is a client of an NDMP server application. An NDMP client sends commands to the NDMP server application to control the backups and restores on an NDMP host.

NetBackup for NDMP is an application that allows NetBackup to be an NDMP client.

## NetBackup for NDMP Server

A NetBackup for NDMP server is a NetBackup master or media server that has NetBackup for NDMP installed on it.

## NDMP Storage Unit

An NDMP storage unit stores the backup data for an NDMP host. The tape drives in this storage unit attach directly to the NDMP host or to a NetBackup media server acting as an NDMP host (for remote NDMP). These drives cannot be used to store data for non-NDMP hosts.

## Three-Way Backup/Restore

In a three-way backup or restore, data travels between an NDMP host and a storage device that is attached to another NDMP host (or to a NetBackup media server) on the network. This contrasts with local NDMP backup / restore, where the data travels between an NDMP host's disk and a storage device directly attached to the same NDMP host.



### Remote NDMP Backup/Restore

This is a form of three-way backup / restore, in which data travels from an NDMP host on the network to a storage device attached to a NetBackup media server. The storage device on the NetBackup media server is used for NDMP data only. Data movement is controlled by an NDMP "mover agent" (a daemon / service) running on a supported NetBackup media server.

Remote NDMP is supported on Solaris and Windows NT / 2000 platforms. For the latest information on supported platforms, refer to "NDMP Information on the Web" on page xii.

### Redirected Restore (to a Different Client)

In a redirected restore, files are restored to a client other than the one from which they were originally backed up. In NetBackup for NDMP, this means the restore data travels from an NDMP host (or NetBackup media server) with a locally attached storage device to another NDMP host on the network.

## Technical Overview

This section describes how NetBackup works with NDMP hosts:

- NDMP (Network Data Management Protocol)

  An overview of NDMP in a NetBackup configuration.

- NetBackup for NDMP

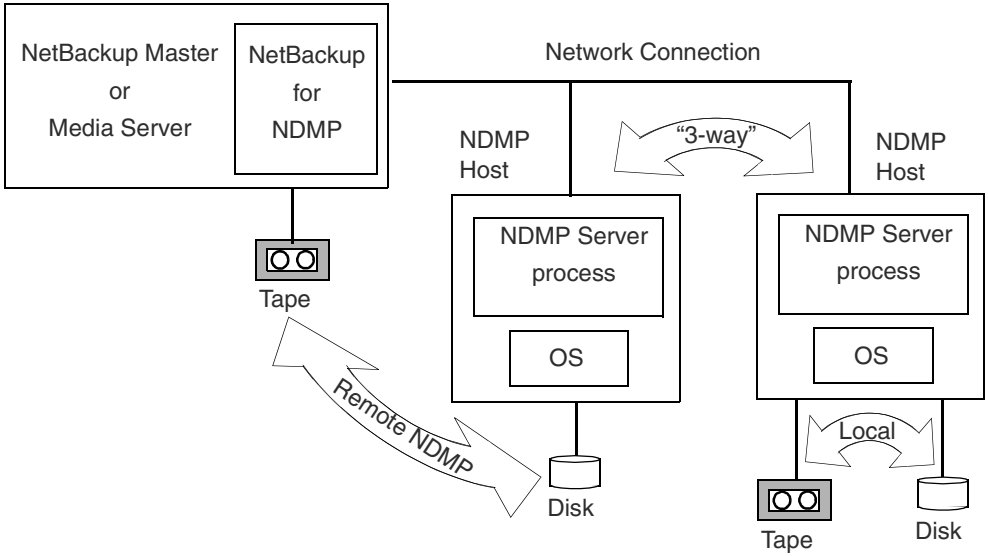
  An overview of NDMP policies, NDMP storage units, and NetBackup processes for backing up and restoring clients in an NDMP policy.

### NDMP (Network Data Management Protocol)

NDMP is a widely used protocol through which an NDMP-conformant backup application can control the backups and restores of any NDMP host that is running an NDMP server application.

The following shows an example of NDMP architecture in a NetBackup configuration.

NDMP Architecture




NDMP architecture follows the client/server model.

- The NetBackup master or media server that has NetBackup for NDMP installed is called a *NetBackup for NDMP server*.
- The host where the NDMP server application resides is called an *NDMP host*.
- The NetBackup software is a client of the NDMP server application. NetBackup for NDMP is the application that allows NetBackup to be an NDMP client.

The NDMP server application performs backups and restores of the NDMP host, as directed by commands that it receives from an NDMP client (NetBackup). During a *local* backup or restore, the data travels between the NDMP host's disk and its locally attached storage devices. During a *three-way* backup or restore, the data travels over the network, between an NDMP host and a storage device that is attached to another NDMP host configured on the network. In a special kind of three-way backup called remote NDMP, the data travels over the network between an NDMP host and a storage device that is attached to a NetBackup media server.



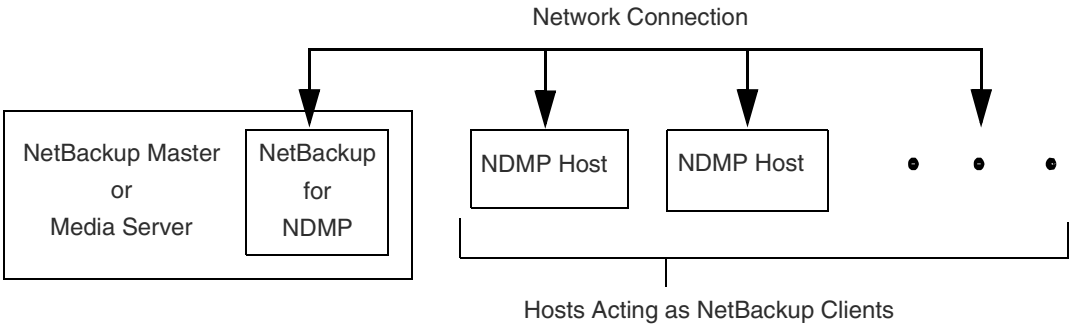
# NetBackup for NDMP

## NDMP Policies

After installing and configuring NetBackup for NDMP, you can schedule backups by creating an NDMP policy in NetBackup.

An NDMP policy can have one or more NetBackup clients. Each NetBackup client must be an NDMP host (see diagram). Note that you do not install any NetBackup software on the NDMP hosts.

NDMP Hosts as NetBackup Clients

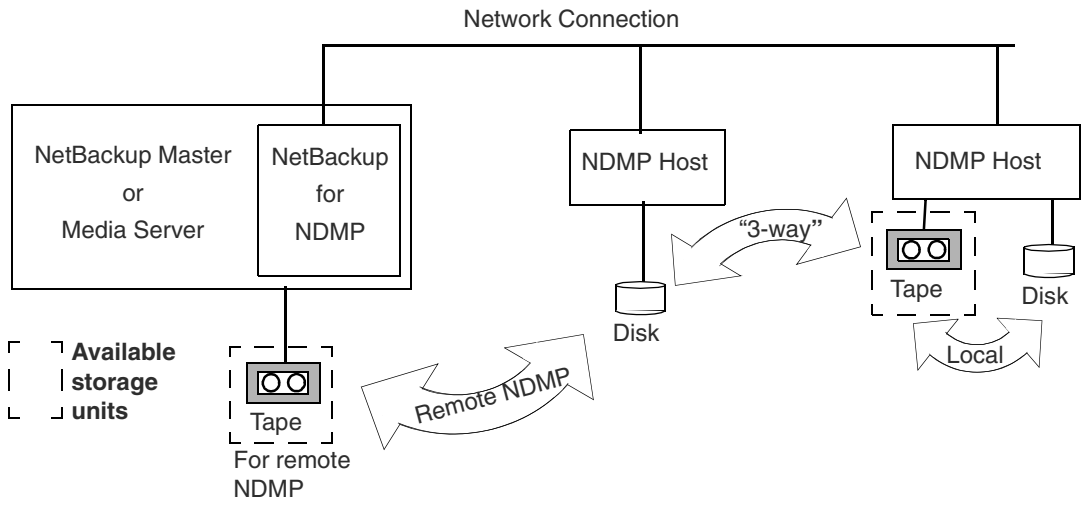



The allowable backup types for schedules in an NDMP policy are: Full, Cumulative Incremental, or Differential Incremental. User backups and archives are not allowed, because there is no NetBackup client software on the NDMP hosts.

Restores of NDMP host backups can be initiated from any NetBackup media server that shares the same master server. The data can be restored to the NDMP host where it was backed up or to another NDMP host.

NDMP policies can use only NDMP-type storage units. NDMP storage units can store data from any networked NDMP host (local or “three-way”). Three-way means that an NDMP host on the network can send backup data to (or receive restore data from) a storage unit that is attached to a different NDMP host or to a NetBackup media server. See diagram titled “NDMP Storage Units.”

NDMP Storage Units




## NDMP Storage Units

An NDMP storage unit can contain standalone or robotic drives. Robotic drives can be in a TSD (Tape Stacker DLT), TLD (Tape Library DLT), TL8 (Tape Library 8MM) robot, or an ACS-controlled robot.

If the robot type is TLD or TL8, some drives can attach to NDMP hosts and other drives can attach to NetBackup servers.

For example, in the following diagram ("NDMP and Non-NDMP Storage Units"):

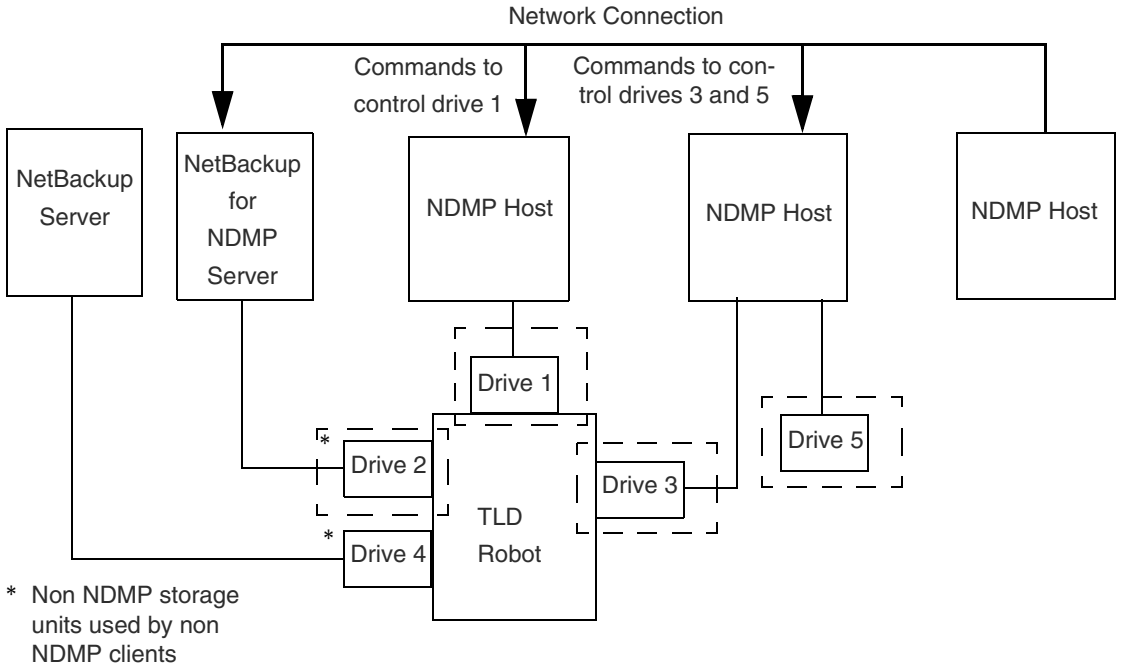
- Tape drives 1, 3, and 5 attach to NDMP hosts and are in NDMP storage units that can be used for NDMP backup (local or three-way).

  The commands that control these drives originate on the NetBackup for NDMP server and are sent through the NDMP connection on the network. The NDMP server application on each NDMP host translates the NDMP commands into SCSI commands for the local drives.

- Tape drives 2 and 4 attach to NetBackup servers and are in non-NDMP storage units. These drives can be used only for non-NDMP clients of NetBackup and are controlled in the same way as other drives on NetBackup servers.



NDMP and Non-NDMP Storage Units



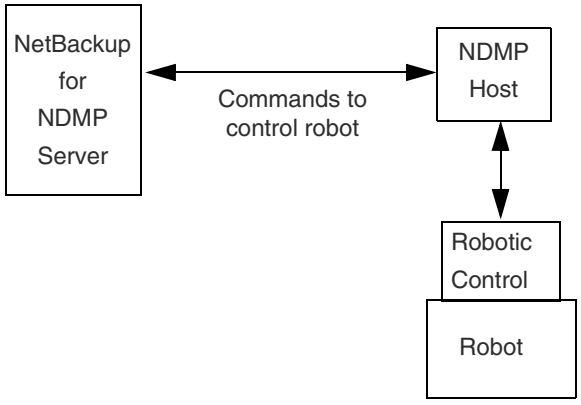

**Note** Another drive can be locally attached to a NetBackup media server, to be used as a dedicated NDMP storage unit for NDMP three-way backups (see diagram “Remote NDMP Storage” on page 10).

Robotic control can attach to an NDMP host or to a NetBackup server, as follows:

- NDMP host (see following diagram).

  Commands that control the robot are sent over the network and are passed to the robot by the NDMP server application running on the NDMP host.

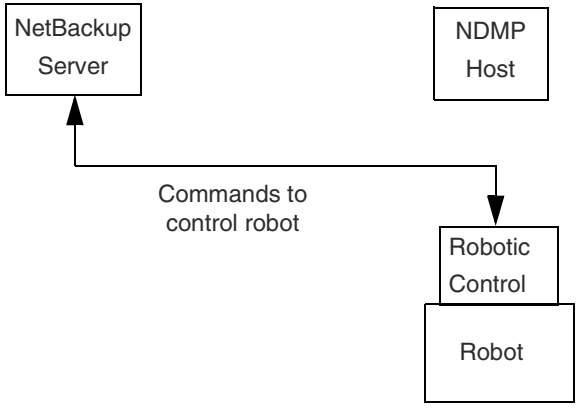
  Robotic Control Attached to an NDMP Host




- NetBackup server (see following diagram). This can be a NetBackup for NDMP server.

  The robot is controlled in the same way as other robots on NetBackup servers.

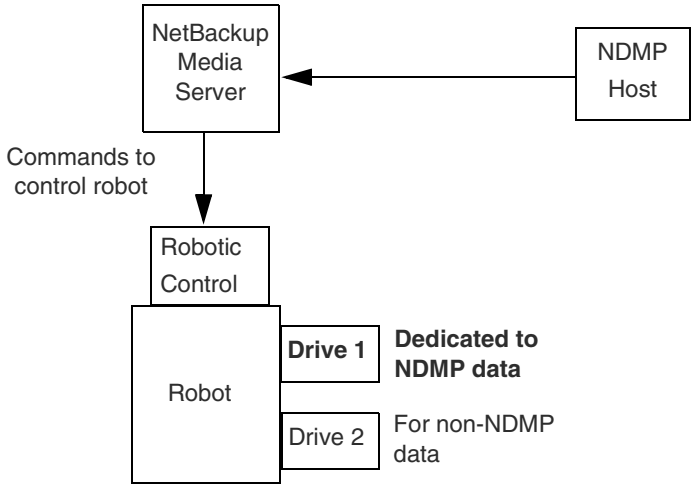
  Robotic Control Attached to a NetBackup Server



In a variation called a remote NDMP configuration, a NetBackup media server uses a local drive to store backups as directed by the NDMP host (see following diagram).

The drive on the NetBackup media server must be used for NDMP backups only. The NDMP host runs “three-way” backups. Refer to the “Remote NDMP” chapter for more information.

Remote NDMP Storage



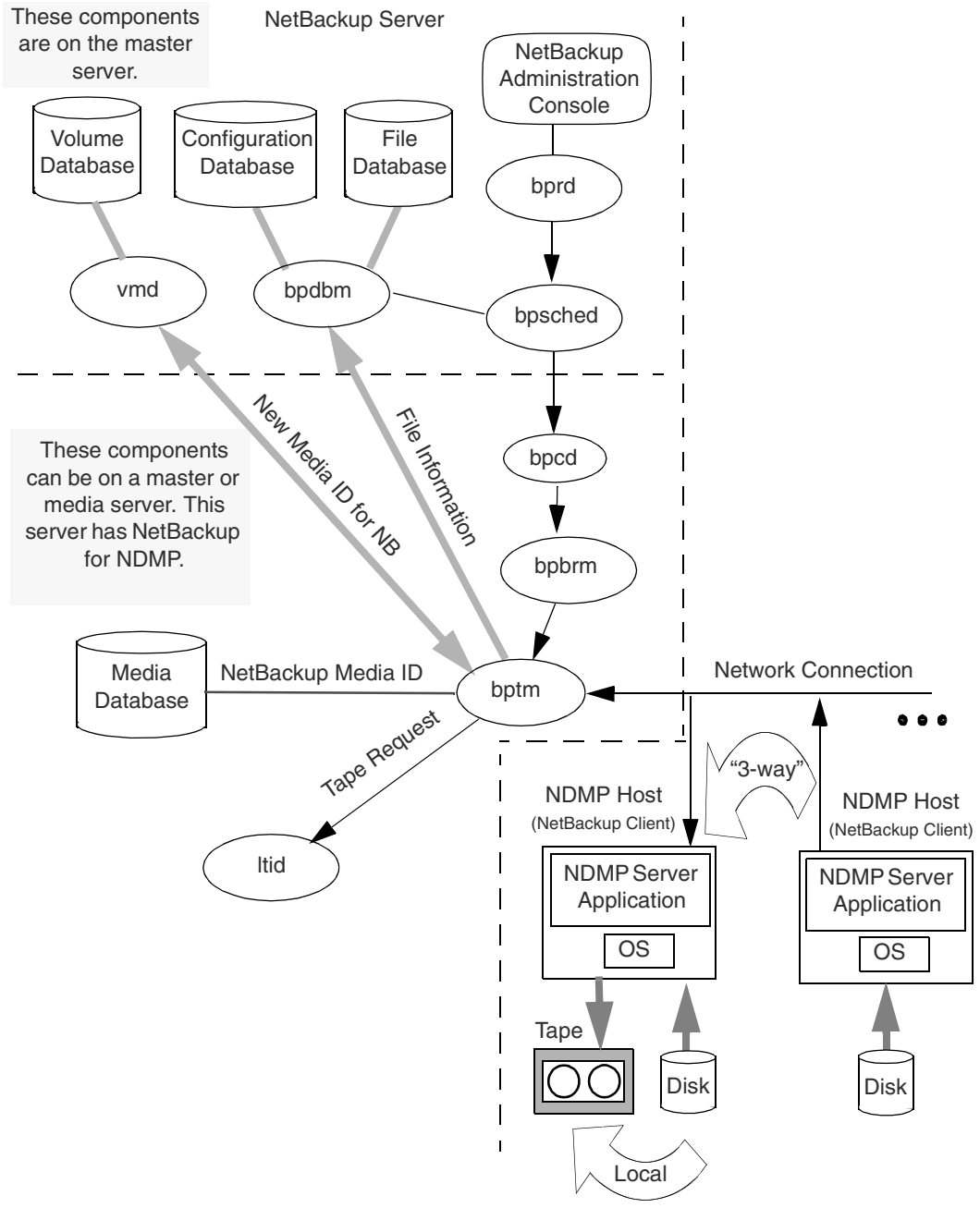
## NDMP Backup Processes

The following diagram (“NetBackup Backup Processes”) shows the NetBackup processes that are involved in NDMP backups. During a backup, the following events occur:

- NetBackup obtains a media ID for the tape that will be used for the backup and requests `ltid` to mount that tape.
- `ltid` on the NetBackup for NDMP server sends the NDMP commands necessary to get the requested tape mounted on the storage device.
- NetBackup sends the NDMP commands necessary to have the NDMP server application perform a backup to the tape. The backup data travels in one of two ways:
  - Between the local disk and tape drives on an NDMP host
  - Over the network, from an NDMP host without its own storage device to a NDMP host (or NetBackup media server) with a locally attached storage device (three-way backup)
- The NDMP server application sends information to the NetBackup for NDMP server about the files that were backed up. This information is stored in the NetBackup file database.
- The NDMP server application sends status about the backup operation to the NetBackup for NDMP server.



NetBackup Backup Processes



## NDMP Restore Processes

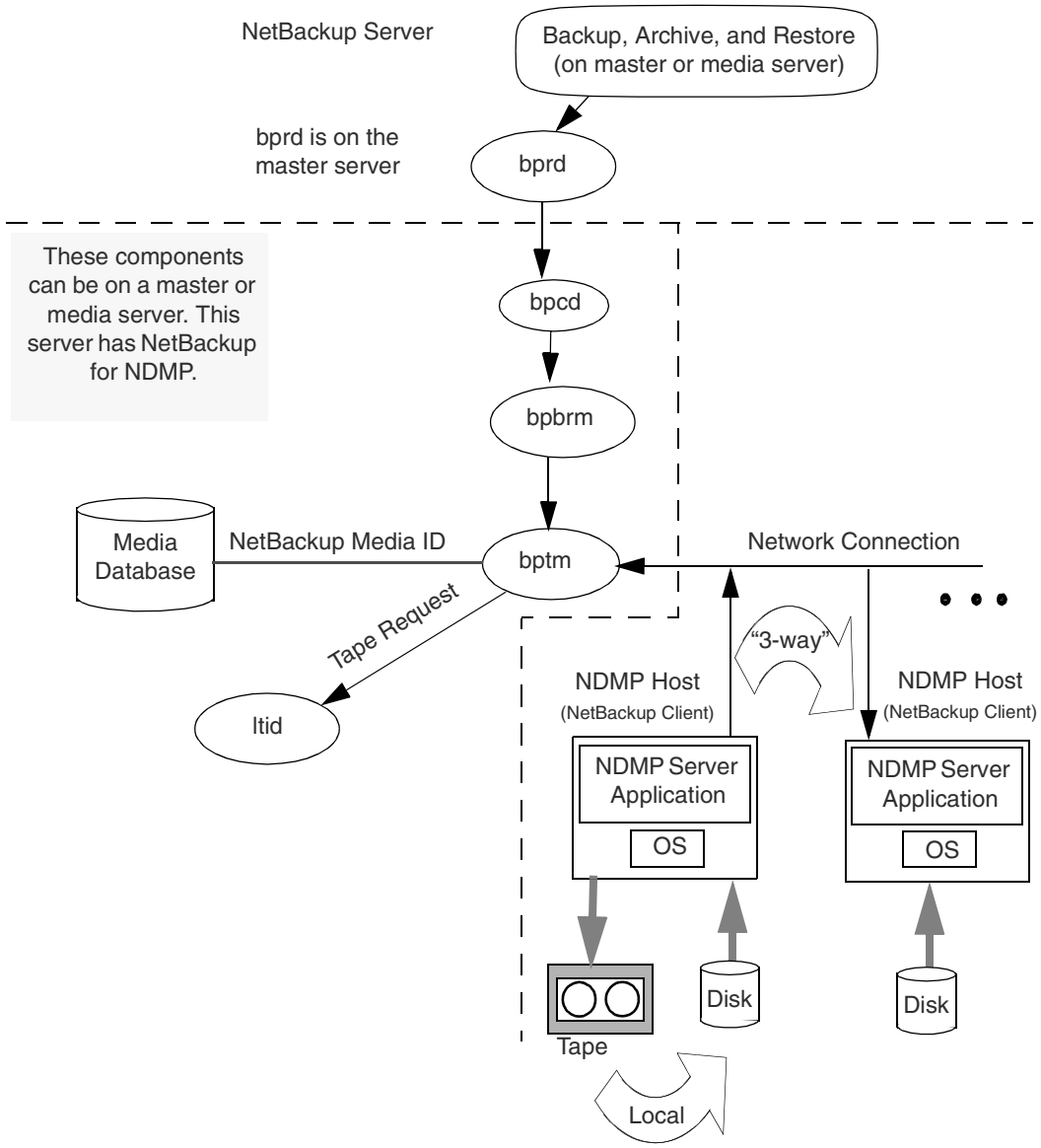
Only the administrator on a NetBackup server (master or media) can restore files from NDMP backups. During a restore, the administrator browses and selects files from NDMP images in the same manner as for standard backup images.

"NetBackup Restore Processes" shows the NetBackup processes involved in NDMP restores. The following events occur during a restore:

- The NetBackup for NDMP server looks in its media database for the tape that contains the backup, and requests `ltid` to mount that tape.
- `ltid` on the NetBackup for NDMP server sends the NDMP commands necessary to get the requested tape loaded on the storage device.
- NetBackup sends the NDMP commands necessary to have the NDMP server application perform a restore operation to the disk. The restore data travels in one of two ways:
  - From a tape drive to a local disk (tape drive and disk are on the same NDMP host)
  - Over the network, from an NDMP host (or NetBackup media server) with a locally attached storage device to another NDMP host (three-way backup / restore)
- The NDMP server application sends status about the restore operation to the NetBackup for NDMP server.



NetBackup Restore Processes



# Installing NetBackup for NDMP 2

This chapter explains how to install the NetBackup for NDMP application on UNIX and Windows NT/2000 hosts.

## Installation Prerequisites

- The NetBackup for NDMP 4.5 software must be installed on supported Solaris, HP-UX, Red Hat Linux, AIX, or Windows NT/2000 master or media servers.

  For a detailed list of platforms supported by NetBackup for NDMP, refer to "NDMP Information on the Web" on page xii.

- Drives and robots attached to the NDMP host must be types supported by the NDMP host and NetBackup. Supported robot types are TSD, TLD, TL8, or drives controlled by the Automated Cartridge System (ACS). For more information on storage devices, see the *Media Manager System Administrator's Guides* (UNIX or Windows).

- The NetBackup for NDMP master/media server must be running NetBackup 4.5 or later (BusinesServer or DataCenter).

- Passwords for NDMP hosts cannot be longer than 8 characters.

## Before Starting the Installation

For notes and tips on your NDMP host, refer to "NDMP Information on the Web" on page xii.



# Installation Procedure on UNIX Hosts

On the UNIX host that you want to be the NetBackup for NDMP server, perform the following:

1. Log in as root.

2. Install NetBackup server and client software as explained in the *NetBackup Installation Guide for UNIX*.

3. Make sure a valid license key for NetBackup for NDMP has been registered by entering the following command to list and add keys:

   **`/usr/openv/netbackup/bin/admincmd/get_license_key`**

4. Insert the CD-ROM containing NetBackup for NDMP software in the drive.

5. Change your working directory to the CD-ROM directory:

   **`cd /`*`cd_rom_directory`***

   Where *cd_rom_directory* is the path to the directory where you can access the CD-ROM. On some platforms, it may be necessary to mount this directory.

6. To install NetBackup for NDMP, execute the following:

   **`./install`**

   Since other NetBackup products are included on the CD-ROM, a menu appears.

7. Select **NetBackup Add-On Product Software**.

   a. Select the **NetBackup for NDMP** option.

   b. Enter **`q`** to quit the menu.

   c. When asked if the list is correct, answer **`y`**.

8. If this NetBackup for NDMP server is not your master server, also install your NDMP license key on the master.

# Installation Procedure on Windows NT/2000 Hosts

On the Windows NT/2000 host that you want to be the NetBackup for NDMP server, perform the following:

1. Log in.

2. Install NetBackup server and client software as explained in the *NetBackup Installation Guide for Windows*.

3. NetBackup for NDMP is part of the core NetBackup product. Make sure a valid license key for NetBackup for NDMP has been registered by doing the following to list and add keys:

   a. From the NetBackup Administration window, choose **Help**.

   b. From the **Help** menu, select **License Keys ...**.

      The NetBackup License Keys window appears. Existing keys are listed in the lower part of the window.

   c. To register a new key, click the star icon  to open the Add a new License Key dialog. Type the new license key in the **New license key** field and click **Add**.

      The new license key appears in the lower part of the dialog box.

4. If this NetBackup for NDMP server is not your master server, install your NDMP license key on the master.



# Configuring NetBackup for NDMP 3

This chapter explains how to configure NetBackup for NDMP for use on supported NetBackup servers. Only NDMP-specific steps are described in this guide.

For detailed information about configuring NetBackup and Media Manager, see the *NetBackup System Administrator's Guide* and the *Media Manager System Administrator's Guide*.

For information on configuring devices, see the *Media Manager Device Configuration Guide*.

The following topics are covered in this chapter:

- Authorizing Access To the NDMP Host
- Configuring NDMP Storage Devices
- Adding NDMP Storage Units and Policies
- Testing an NDMP Configuration



# Authorizing Access To the NDMP Host

Before NetBackup can carry out backup operations, it must have access to the NDMP host. To authorize this access, execute the following command on your NetBackup for NDMP server (refer to the "NetBackup for NDMP Commands" appendix for more information on this command):

**`set_ndmp_attr -auth`** ***ndmp-server-host username***

Where:

- *ndmp-server-host* is the name of the NDMP host that NetBackup will be backing up.
- *username* is the user name under which NetBackup will be accessing the NDMP host. This user must have permission to execute the NDMP commands.

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**Note** To see if your NDMP host vendor requires a particular username, refer to "NDMP Information on the Web" on page xii.

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- On Windows NT/2000 systems, the `set_ndmp_attr` command is located in the *install_path*`\Volmgr\bin` directory. By default, the location is:

  ```
  C:\Program Files\Veritas\Volmgr\bin\
  ```

- On UNIX, the command is located in the `/usr/openv/volmgr/bin/` directory.
- Usage information for the command can be obtained using the `-help` option.

**Example**

(The examples in this chapter use "stripes" as the ndmp-server-host name.)

On Windows NT/2000:

*install_path*`\Volmgr\bin\set_ndmp_attr -auth stripes root`

```
Password: *******
Re-enter Password: *******
```

On UNIX:

```
/usr/openv/volmgr/bin/set_ndmp_attr -auth stripes root
Password: *******
Re-enter Password: *******
```

---

**Note** NDMP-host-authentication passwords (up to eight characters in length) are encrypted with MD5 encryption, and then stored in a file on your NetBackup server. Although this file is only accessible to the root user, a user who locates and decodes this password would be able to log into the NDMP host system with full root-user privileges.

---

### Access for Three-Way Backups

To perform three-way backups, the NetBackup for NDMP server must be able to access an NDMP host that has no attached tape drive. You must perform the `set_ndmp_attr` command on the NetBackup for NDMP server for this NDMP host.

`set_ndmp_attr -auth` *ndmp-server-host username*

where *ndmp-server-host* is the name of the NDMP host that has no attached tape drive.

## Configuring NDMP Storage Devices

The drives and robots that attach to the NDMP host must be configured before NetBackup can use them.

**Note** The NetBackup wizards cannot be used to configure robots or drives that are directly attached to the NDMP host.

To configure robots and drives for NDMP, perform the following two steps on the NetBackup server:

1. System Device Configuration

   This involves completing the configuration necessary for the system to recognize the robot(s).

2. Media Manager Device Configuration

   This involves specifying the information that Media Manager requires to recognize and control the devices.

For more information on configuring storage devices for specific NDMP hosts, refer to “NDMP Information on the Web” on page xii.

### System Device Configuration

This involves configuring the robotic control.

#### Configuring Robotic Control

The method required to configure the robotic control depends on whether the robotic control attaches to the NDMP host or to the NetBackup for NDMP server.



### For Robotic Control Attached to the NetBackup Server

If the robotic control attaches directly to the NetBackup for NDMP server or other NetBackup server, configure the robotic control as explained in the *Media Manager Device Configuration Guide*.

In this type of configuration, the NetBackup server controls the robot.

### For Robotic Control Attached to the NDMP Host

If the robotic control attaches directly to the NDMP host, you must specify the following robotic control information:

- device name
- controller number
- SCSI ID
- LUN (logical unit number).

To specify this information, execute the following command on the NetBackup for NDMP server:

**`set_ndmp_attr -robot`** *ndmp-server-host robot-device scsi-controller scsi-id scsi-lun*

Where:

- *ndmp-server-host* is the name of the NDMP host where the robotic control is attached.
- *robot-device* is the device name for robotic control.
- *scsi-controller* is the controller number.
- *scsi-id* is the SCSI ID for the robotic control.
- *scsi-lun* is the LUN for the robotic control.

**Note** Some NDMP hosts require only the *ndmp-server-host* and *robot-device* . To obtain information on particular hosts, see “NDMP Information on the Web” on page xii.

### Example

In the following example, assume that `stripes` is the NDMP host and has a robot with robotic control information as follows:

NDMP server host name = stripes

robot device name = c2t3l0

SCSI controller number = 2

SCSI ID = 3

SCSI LUN = 0

On Windows NT/2000, you would execute the following command:

*install_path*\Volmgr\bin\set_ndmp_attr -robot stripes c2t3l0 2 3 0

On UNIX, you would execute the following command:

```
/usr/openv/volmgr/bin/set_ndmp_attr -robot stripes c2t3l0 2 3 0
```

### Displaying Configuration Settings

When your configuration is complete, you can display your configuration settings by entering the `-list` option with the `set_ndmp_attr` command, as follows:

On Windows NT/2000:

*install_path*`\Volmgr\bin\set_ndmp_attr -list`

On UNIX:

```
/usr/openv/volmgr/bin/set_ndmp_attr -list
```

The following is sample output:

```
Record Type: Authentication
NDMP Server: stripes
Username:    root
Password:    <registered>

Record Type: Robotic Information
NDMP Server: stripes
Device:      c2t3l0
Controller:  2
SCSI Id:     3
SCSI LUN:    0
```

**Note** If you change the robot configuration on the NDMP host, use `set_ndmp_attr -robot` to update the NetBackup for NDMP server with your changes.

## Verifying NDMP Password and/or Robot Connection

Once you have created the authorization, you can verify the following:

- The NDMP server connection to the NetBackup host
- The robotic configuration on the NDMP host

For example:

```
set_ndmp_attr -verify stripes
```



Where `stripes` is the name of the NDMP host.

**A successful verification would look like the following:**

```
Verify Host name: stripes
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
  host supports MD5 authentication
Getting MD5 challenge from host...
Logging in using MD5 method...
Login was successful
Opening SCSI device "c2t3l0"...
Setting SCSI target controller 2 id 3 lun 0...
Inquiry result is "HP      C5173-7000      3.04"
```

**A failed verification (due to incorrect password) would look like this:**

```
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
Logging in using TEXT method...
ndmp_connect_client_auth failed
set_ndmp_attr: host "stripes" failed
set_ndmp_attr: unable to continue
```

In case of the above failure, either the username or password specified on the `set_ndmp_attr -auth` command did not match the username / password stored on the NDMP host, or the password is longer than 8 characters.

## Media Manager Device Configuration

On the NetBackup for NDMP server, use **Media and Device Management** in the NetBackup Administration Console to add drives and robots.

The following procedures and examples treat NDMP configuration issues only. See the *Media Manager System Administrator's Guide* (Windows or UNIX) for general information on configuring NetBackup media.

## Adding a Robot Directly Attached to an NDMP Host

1. Start the NetBackup Administration Console on the NetBackup for NDMP server as follows:

   On Windows NT/2000: from the Windows **Start** menu, select **Programs, VERITAS NetBackup, NetBackup Administration Console**.

   On supported UNIX servers, enter the following:

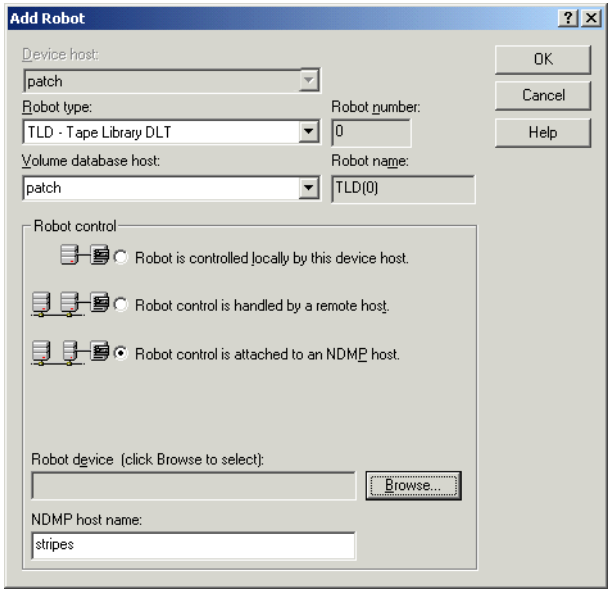
   ```
   /usr/openv/netbackup/bin/jnbSA &
   ```

2. Click on **Devices** under **Media and Device Management** in the left pane.

3. On the **Actions** menu, select **New**, then select **New Robot...** from the popup. The Add Robot dialog appears.

Explained in online help or in the *Media Manager System Administrator's Guide.*

Explained in the following steps.



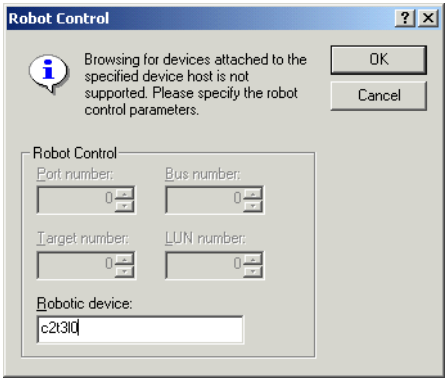
4. For assistance with the Add Robot dialog, refer to the online help or to the *Media Manager System Administrator's Guide* (Windows or UNIX). The steps below explain the portions that are unique to configuring NetBackup for NDMP.

5. Under **Robot control**, click the button for **Robot control is attached to an NDMP host.**

6. In the field labeled **NDMP host name**, enter the name of the NDMP host to which the robot is attached.

7. Click the **Browse** button next to the field labeled **Robot device**.

   The Robot Control dialog appears on Windows (Devices dialog on UNIX)**.**




8. In the **Robotic device** field, enter the device name for the robot. To determine the name of the robot, refer to "NDMP Information on the Web" on page xii to obtain information pertaining to your NDMP host.

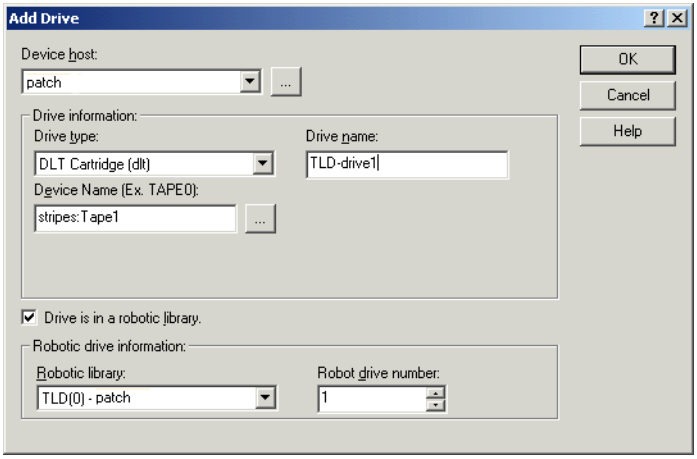
9. Click **OK**, then click **OK** in the Add Robot dialog.

   A popup message asks if you want to stop and restart the device manager service (or daemon). Click **Yes**.

## Adding a Drive

1. Click **Devices** under **Media and Device Management** in the NetBackup Administration Console.

2. On the Actions menu, select **New**, then select **New Drive...** from the popup. The Add Drive dialog appears.




3. With the exception of the **Device Name** field (on UNIX, this field is called **No Rewind Device**), complete the dialog box as explained in the online help or in the *Media Manager System Administrator's Guide*.

   **Device Name**

   - If the drive is not attached directly to the NDMP host, follow the instructions in the *Media Manager System Administrator's Guide* for this entry.
   - If the drive is attached directly to the NDMP host, use the following notation for this field. First refer to the vendor documentation for your drive for the correct format of the device file.

     *ndmp_host_name:device_file*

     Where:

     *ndmp_host_name* is the name of the NDMP host where the drive is attached.

     *device_file* is the name of the file for the drive.

     For example: `stripes:c2t3l0`

**Note** From the browse button (...) next to the **Device Name** field, you cannot browse for devices attached to an NDMP host. The devices shown on the resulting **Devices** display are those attached to the NetBackup media server.

4. When the dialog box is complete, click **OK**.

   A message should appear, asking whether or not you want to restart the Media Manager device daemon and all robotic daemons. Click **Yes**.



### Checking a Media Manager Configuration

On the NetBackup for NDMP server, do the following:

- On UNIX, execute **/usr/openv/volmgr/bin/vmps** and verify that `ltid`, `vmd`, `avrd`, and any required robotic daemons are active. On Windows NT/2000, go to the NetBackup Administration Console and use the Activity Monitor (Processes tab) to verify that the above processes are active.
- From the NetBackup Administration Console, use the Device Monitor to ensure that the drive is in the UP state.

### Adding Volumes to a Media Manager Configuration

Use the NetBackup **Media and Device Management** utility to add the volumes that you will be using for the NDMP host backups. See the *Media Manager System Administrator's Guide* for instructions.

**Note** When specifying the Robot Control Host for a volume that will be in a robot, specify the host name for the NetBackup for NDMP server, not the NDMP host.

## Adding NDMP Storage Units and Policies

After ensuring that access to the NDMP host is authorized and NDMP storage devices are configured, use one of the available NetBackup administrative interfaces to add a storage unit and policy. Both of these tasks are performed on the NetBackup master server.

**Note** You can use the Backup Policy Configuration wizard to create NDMP policies.

### Adding an NDMP Storage Unit

On the NetBackup master server, add a NetBackup storage unit for the devices that will contain the backup data.

Most of the requirements are the same as for adding a Media Manager storage unit. The following topics explain the differences when adding an NDMP storage unit. See the *NetBackup System Administrator's Guide* (Windows or UNIX) for more information.

Specify the following requirements as indicated:

- Storage unit type

  The type of storage that this storage unit supports. Click the **Storage Unit Type** box and select **NDMP** from the list.

- On demand only

  Specifies whether the storage unit is available only on demand (that is, only when a policy or schedule requests it). If this option is not used, the storage unit is available to any NDMP policy or schedule.

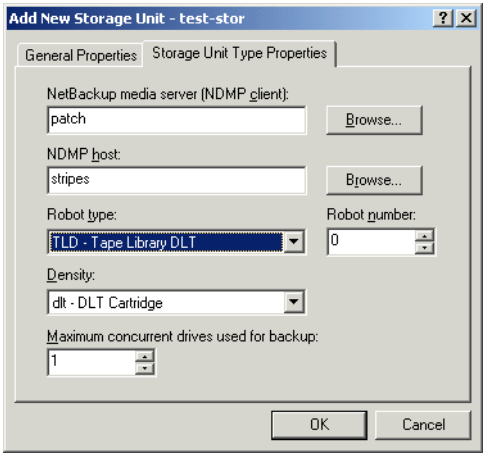
- NetBackup media server (NDMP client)

  The name of the NetBackup for NDMP server that will be backing up the NDMP host.

- NDMP host

  The NDMP host where the tape drive is physically attached.

The following is an example Add New Storage Unit dialog:




## Creating an NDMP Policy

On the NetBackup master server, create an NDMP policy to configure backups of the NDMP host.

Creating an NDMP policy is very similar to creating other NetBackup policy types. The following topics explain the differences when creating NDMP policies.

See the *NetBackup System Administrator's Guide* for more information on NetBackup policies and the Policy utility.



## Attributes

Specify the following policy attributes:

- **Policy Type: NDMP**
- **Policy Storage Unit:**
  - If the NDMP host has more than one storage unit and you want to direct backups for this policy to a specific storage unit, then specify the name of that storage unit.
  - For a three-way backup (described in the Introduction), specify a storage unit that was defined for the target NDMP host with attached tape.
  - For remote NDMP backup, specify a storage unit that was defined for a storage device connected to a NetBackup media server.

## Clients

In the client list, specify the following for each client in a NDMP policy:

- **Hostname**

  Name of the NDMP host

- **Hardware and operating system**

  **NDMP NDMP**

## Files

The file list must contain directories relative to their perspective on the NDMP host.

Two examples:

```
/home/dir1/
/vol1
```

The following file list capabilities are NOT supported for an NDMP policy:

- Wildcards in pathnames. For example, `/home/*` is an invalid file list entry.
- Individual file names. Only directory or volume names are allowed.
- Exclude list (because client software is not installed on the NDMP host). You can, however, exclude files by using the `SET` keyword as shown under "Using Environment Variables in a File List." The `SET` option allows you to exclude files on a backup. The format is vendor dependent; refer to the vendor's documentation for more details on which variable can be passed and in what format.

## Schedules

You can specify any of the following backup types in a schedule for an NDMP policy:

- Full
- Cumulative Incremental
- Differential Incremental

Specify **Override policy storage unit** only if this client of NetBackup (the NDMP host) has more than one storage unit and you want to use a specific storage unit for this schedule. In this case, the client must be the only client in this NDMP policy.

## Using Environment Variables in a File List

NDMP allows you to use environment variables to pass configuration parameters to an NDMP host with each backup. NDMP environment variables can be one of the following types.

- Defined as optional by the NDMP protocol specification.

  You can set these variables.

- Specific to an NDMP host vendor.

  You can set these variables.

- Reserved for use by NetBackup:

  *FILESYSTEM*

  *LEVEL*

  *DIRECT*

  *EXTRACT*

  *ACL_START*

In NetBackup, environment variables can be set within the file list by specifying one or more `SET` directives. The syntax of a `SET` directive is as follows:

`SET` *variable* `=` *value*

Where *variable* is the name of the environment variable and *value* is the value that is assigned to it. The value can be enclosed in single or double quotes, and must be enclosed in quotes if it contains a space character. For example:

```
SET ABC = 22
SET DEF = "hello there"
SET type = tar
```



Setting a variable equal to no value unsets that variable. For example:

```
SET ABC =
```

Variables accumulate as the file list is processed. For example, if the file list contains the following entries:

```
/vol/vol1
SET HIST = N
/vol/vol2
SET DEF = 20
SET SAMPLE = all
/vol/vol3
```

Directory `/vol/vol1` will be backed up without any user-specified environment variables. The second directory (`/vol/vol2`) will be backed up with the variable `HIST` set to `N`. The third directory (`/vol/vol3`) will be backed up with all three of the environment variables set.

If an environment variable appears again later in the list, the value of this variable overrides the previous value of the variable.

The values used in each backup are saved and provided to subsequent restores of the directory.

The NDMP host may have environment variables that are set internally and these are also saved for restores.

## Path-Based History

The NDMP server may send catalog information consisting of complete path names to NetBackup. This is called path-based history.

To set path-based history, enter an environment variable in the file list. For example:

```
SET type = tar
/vol/vol1
```

In this example, path-based history is set by `SET type = tar`. It applies to a backup or restore of /vol/vol1.

**Note** The path-based history entry must occur in the file list *before* the directories and files it applies to.

Path-based history is not supported by all NDMP host vendors. To obtain up-to-date information on the NDMP vendors supporting path-based history, and for the particular syntax to use in setting it, refer to “NDMP Information on the Web” on page xii.

# Testing an NDMP Configuration

To test the configuration, back up the policy and then restore some files. For instructions, see the following topics:

- “Performing an NDMP Backup” on page 36
- “Performing a Restore from Windows Servers” on page 37 or “Performing a Restore from UNIX Servers” on page 38

If you encounter problems, see “Troubleshooting” on page 39.



# Using NetBackup for NDMP 4

The following topics are covered in this chapter:

- Performing an NDMP Backup
- Performing a Restore from Windows Servers
- Performing a Restore from UNIX Servers
- Troubleshooting



# Performing an NDMP Backup

Only the administrator can perform backups and restores on the NetBackup server (master or media). The NDMP protocol does not allow users to initiate a backup or restore. User-directed backups and archives of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

## Automatic Backup of an NDMP Policy

To configure an NDMP policy and set up schedules for automatic, unattended backups, see "Adding NDMP Storage Units and Policies" on page 28 and the *NetBackup System Administrator's Guide* (Windows NT/2000 or UNIX).

## Manual Backup of an NDMP Policy

Only a NetBackup administrator can initiate an NDMP backup. The following procedure explains how to perform the backup using the NetBackup Administration Console. For further information on the NetBackup Administration Console, see the *NetBackup System Administrator's Guide* (Windows or UNIX).

1. As administrator, start the NetBackup Administration Console on the NetBackup server as follows:

   On Windows NT/2000: from the Windows **Start** menu, select **Programs, VERITAS NetBackup, NetBackup Administration Console**.

   On UNIX, enter the following:

   ```
   /usr/openv/netbackup/bin/jnbSA &
   ```

2. Click on **Policies**. Right click on the NDMP policy name and select **Manual Backup** from the pop-up menu.

   This opens the Manual Backup dialog.

3. In the Manual Backup dialog, select a schedule, then select the clients (NDMP hosts) that you want to back up.

   If you do not select any schedules, NetBackup uses the schedule with the highest retention level. If you do not select any clients, NetBackup backs up all configured NDMP hosts.

4. Click **OK** to start the backup.

# Performing a Restore from Windows Servers

User-directed restores of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

The administrator can use the Backup, Archive, and Restore interface on a NetBackup server (master or media server) to restore files to the NDMP host from which they were backed up, or to a different host.

The following procedure explains how to restore using the NetBackup Administration Console for Windows NT/2000.

**Caution** An NDMP restore always overwrites existing files.

1. As the administrator, start the NetBackup Administration Console on any NetBackup server.
2. From the File menu, select **Backup, Archive, and Restore**.
3. Click **Select for Restore** from the tool bar, then select the **File** menu, and click **Specify NetBackup Machines**.

   The Specify NetBackup Machines dialog appears. Modifications made in this dialog affect all open restore windows and are not saved after closing the Restore window.
4. On the **Servers** tab, specify the NetBackup master server. If your configuration has multiple master servers, specify the master server that has the policy for the NDMP host that you are restoring.
5. When finished, click the **Make Current** button.
6. On the **Source Clients** tab, select the NDMP host. If it is not in the list, enter it under **New Client Name**, and click **Add**. Then select it from the client list and click **Make Current**.
7. In the **Policy Type** field, select **NDMP**.
8. On the **Destination Clients** tab, select the NDMP host and click **Make Current**. Then click **OK**.
9. In the Restore window, browse and mark the files and folders you want to restore.
10. Start the restore.



# Performing a Restore from UNIX Servers

User-directed restores of files are not allowed, since there is no NetBackup client software installed on an NDMP host.

The administrator can use the Backup, Archive, and Restore interface on a NetBackup server (master or media server) to restore files to the NDMP host from which they were backed up, or to a different host.

The following procedure explains how to restore using the NetBackup Administration Console for UNIX.

**Caution** An NDMP restore always overwrites existing files.

1. As the administrator, start the NetBackup Administration Console on any NetBackup server.

2. Click **Backup, Archive, and Restore** in the left pane.

   The Backup, Archive, and Restore window appears. Modifications made in this window affect all open restore windows and are not saved after closing the restore window.

3. From the **Actions** menu, select **Specify NetBackup Machines**.

4. On the **NetBackup server** tab, specify the NetBackup master server. If your configuration has multiple master servers, specify the master server that has the policy for the NDMP host that you are restoring.

5. On the **Source Clients** tab, select the NDMP host. If it is not in the list, enter it under **New Client Name**, and click **Add**. Then select it from the client list and click **Make Current**.

6. In the **Policy type** field, select **NDMP**.

7. On the **Destination client** tab, select the NDMP host and click **Make Current**. Then click **OK**.

8. On the **Restore Files** tab, browse and mark the files and folders you want to restore.

9. Start the restore.

# NDMP Operating Notes and Restrictions

- A tape created on an NDMP storage unit is in backup format and cannot be restored from a non-NDMP storage unit. If you duplicate an NDMP backup image the new copy is still in backup format and cannot be used for restores on a non-NDMP storage unit.
- In the file list for an NDMP policy, you can include only directory paths. Wildcards and individual file names are not allowed.
- You cannot back up files where the path length is greater than 1024 characters.
- Duplicate, import, and verify operations can take a very long time, because the data needs to travel across the network.
- Passwords on the NDMP host must not exceed 8 characters in length.

# Troubleshooting

The following topics provide information useful for troubleshooting NetBackup for NDMP. See the *NetBackup Troubleshooting Guide* (Windows or UNIX) for troubleshooting information about NetBackup.

Before troubleshooting a suspected problem, review the operating notes and restrictions, above.

To obtain troubleshooting information or restrictions that may apply to particular NDMP hosts, refer to “NDMP Information on the Web” on page xii.

## Testing a Robot

Depending on the type of robot, use the tests shown in the following table to exercise the robot:

| Robot Type | Test |
|---|---|
| TSD | `tsdtest` |
| TLD | `tldtest` |
| TL8 | `tl8test` |
| ACS | acstest |



**Example for Windows NT/2000**

To exercise the TSD robot `c2t3l0` that is controlled by the NDMP host named `stripes`, use the following test and commands on Windows NT/2000:

**Note** The drive must be downed before performing this test, or `avrd` may interfere.

*install_path*`\Volmgr\bin\tsdtest -r stripes:c2t3l0 -d1 stripes:/dev/rmt/0cbn`

When prompted, enter ? for help information.

`inquiry` (Displays the vendor and product ID. If you get a UNIT ATTENTION message, try the `mode` command and then continue your testing.)

`s s` (Checks slot status.)

`s d` (Checks drive status.)

`m s3 d1` (Moves a tape from slot 3 to drive 1.)

`m d1 s3` (Moves the tape back to slot 3.)

**Example for UNIX**

To exercise drive 1 in the TLD robot `c2t3l0` that is controlled by the NDMP host `stripes`, use the following commands on UNIX:

`/usr/openv/volmgr/bin/tldtest -r stripes:c2t3l0 -d1 stripes:/dev/rmt/0cbn`

When prompted, enter ? for help information.

`inquiry` (Displays the Vendor and Product ID. If you get a UNIT ATTENTION message, try the `mode` command and then continue your testing.)

`s s` (Checks slot status.)

`s d` (Checks drive status.)

`m s3 d1` (Moves a tape from slot 3 to drive 1.)

`unload d1` (Unloads the tape.)

`m d1 s3` (Moves the tape back to slot 3.)

## Troubleshooting NetBackup

- Check the NetBackup All Log Entries report for information about the failed job.
- To get more information about a problem, do the following:

- On a UNIX-based NetBackup for NDMP server: add the `VERBOSE` value (3 or greater) to the `/usr/openv/netbackup/bp.conf` file. An alternate method is to use the NetBackup Administration Console: expand **Host Properties** in the left pane, click on **Media Server**, and right click on the server name in the right pane. From the pop-up, select **Properties**, then select **Logging**.
- On a Windows NT/2000-based NetBackup for NDMP server: From the NetBackup Administration Console, expand **Host Properties** in the left pane and click on **Media Server**. Right click on the server name in the right pane and then select **Properties (Read/Write)**. On the **Logging** tab, set the **Global logging level** to 3 or higher.
- On the NetBackup for NDMP server, create `bptm` and `bpbrm` debug log folders in the *install_path*`\NetBackup\logs` folder (on Windows-based systems) or in `/usr/openv/netbackup/logs` directory (UNIX systems).
- Create a `bpsched` directory on the master server (the master can also be the NetBackup for NDMP server).

NetBackup creates logs in these three directories, if the directories exist. These directories can eventually require a lot of disk space; delete them when you are finished troubleshooting.

- To verify that the appropriate services are running, use either the NetBackup **Activity Monitor** interface, or the Windows NT control panel (on Windows systems) or the `bpps` command (UNIX systems).
- If NDMP host backups terminate with a status code of 154 (storage unit characteristics mismatched to request), the problem can be one of the following.
  - Verify that the NetBackup configuration is correct.
  - There may be a conflict between the policy type and storage unit type (for example, if the policy type is Standard and the storage unit is of type NDMP).
- If your NDMP backup fails with a status code of 99 (NDMP backup failure), none of the paths in your NDMP policy file list were backed up successfully. Check the NetBackup All Log Entries report for more information. A possible cause of this status is that none of the backup paths exist on the NDMP host.



### NDMP Backup Levels

At the start of a debug log, you may see an entry titled LEVEL. This refers to an environment variable that was set by NetBackup based on the type of backup. Below is an example from a bptm log. For more information on environment variables, refer to "Using Environment Variables in a File List" on page 31.

```
08:48:38.816 [22923] <2> write_data_ndmp: backup environment
values:
08:48:38.816 [22923] <2> write_data_ndmp: Environment 1: TYPE=dump
08:48:38.816 [22923] <2> write_data_ndmp: Environment 2:
FILESYSTEM=/vol/vol0/2million
08:48:38.817 [22923] <2> write_data_ndmp: Environment 3:
PREFIX=/vol/vol0/2million
08:48:38.817 [22923] <2> write_data_ndmp: Environment 4: LEVEL=0
```

The NDMP backup LEVEL is modeled after UNIX dump levels. The backup level is a number in the range of 0 to 9.

An NDMP backup level of 0 is a full backup. A backup level above 0 is an incremental backup of all objects modified since the last backup of a lower level. For example, level 1 is a backup of all objects modified since the full backup (level 0); level 3 is a backup of all objects modified since the last level 2 incremental.

NetBackup Backup Types and Corresponding NDMP Backup Levels

| NetBackup Backup Types | NDMP Backup Levels |
|---|---|
| NetBackup Full | NDMP level 0 |
| NetBackup Cumulative Incremental | NDMP level 1 |
| NetBackup Differential Incremental | NDMP level (last level + 1, up to 9)<br>(never goes higher than 9 |

## Troubleshooting Media Manager (on Windows NT/2000 systems)

- Enable debug logging, by creating reqlib and daemon directories in the *install_path*\Volmgr\debug directory on the NetBackup for NDMP server.
- Check the Windows NT / 2000 Event Viewer Application log for troubleshooting clues. For more information on the Event Viewer logging option, refer to the *NetBackup Troubleshooting Guide for Windows*.

- Use the Activity Monitor interface or the Windows NT/2000 control panel to verify that the Media Manager services are running.
- Drives can be unexpectedly set to the DOWN state due to communication problems between `avrd` on the NetBackup for NDMP server and the NDMP server application on the NDMP host. Some possible causes for the communication problems are:
  - Network cable on the NDMP host was unplugged.
  - NIS (Network Information System) problems on the NetBackup for NDMP server (NDMP client).
  - The NDMP host was halted for too long.

**Note** Whatever the cause, if the `avrd` connection to the NDMP host fails, the drive is set to DOWN and is *not* automatically set to UP when the communication problem is corrected.

## Troubleshooting Media Manager (on UNIX systems)

- Ensure that `syslogd` is logging Media Manager messages. For more information on `syslogd`, refer to the *NetBackup Troubleshooting Guide for UNIX*.
- Start `ltid` with the `-v` option. Check the system's syslog for troubleshooting clues.
- Use `vmps` to make sure that the appropriate Media Manager daemons are running.



# Remote NDMP 5

This chapter describes the remote NDMP feature and contains the following topics:

- Overview of Remote NDMP
- Configuring Remote NDMP
- Port Number



# Overview of Remote NDMP

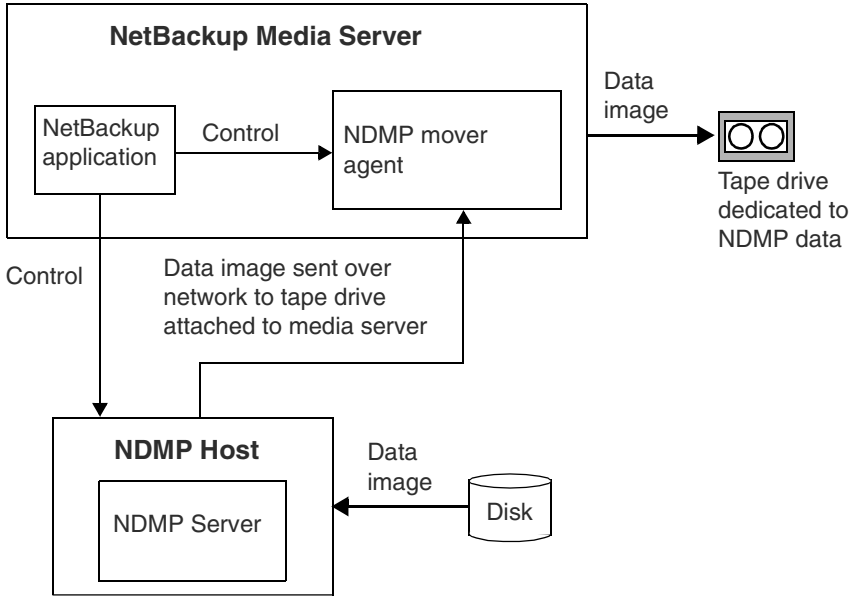
Remote NDMP allows data on an NDMP host to be backed up to a storage device that is connected to a NetBackup media server. This is a form of three-way backup: the NDMP host sends the backup data over the network to a storage device on a NetBackup media server, rather than using a storage device on the NDMP host itself.

Remote NDMP supports 3-way backups of any NDMP host running with NDMP version V2, V3, and V4. However, the remote NDMP process, which runs on the media server, supports version V2.

Remote NDMP is enabled by an NDMP mover agent daemon / service running on the NetBackup media server. The NDMP mover agent acts as an NDMP server.

The following diagram shows the main components required for remote NDMP backup or restore.

Main Components of Remote NDMP




**Note** Some of the drives in a robotic library can be configured for non-NDMP backups, and others can be configured for remote NDMP. Once a drive has been configured for NDMP backup, it cannot be used for non-NDMP backups.

# Configuring Remote NDMP

To set up remote NDMP, you must configure the NetBackup media server as an NDMP host. For details on device configuration, refer to the *NetBackup Media Manager System Administrator's Guide*.

---

**Note** Remote NDMP supports 3-way backups of any NDMP host running with NDMP version V2, V3, and V4. The remote NDMP process, which runs on the media server, supports version V2.

Remote NDMP is supported on Solaris and Windows NT/2000 platforms.

---

1. On the NetBackup media server, verify that the ndmpmoveragent daemon/service is running by entering the following.

   On UNIX:

   ```
   /usr/openv/volmgr/bin/ndmpmoveragent.start
   ```

   On Windows NT/2000:

   *install_path*`\Volmgr\bin\InstallNdmpMoverAgent`

   This installs and starts the NDMP mover agent service. (When a Windows NT/2000 system is rebooted, this service is automatically restarted.) The NDMP mover agent allows the NetBackup media server to act as an NDMP host. For more information on these commands, refer to the "NetBackup for NDMP Commands" appendix.

2. Set up NDMP authentication for the NetBackup media server (on which the ndmpmoveragent daemon/service is running) by entering:

   `/usr/openv/volmgr/bin/set_ndmp_attr -auth` *ndmp-server-host username*

   For example:

   ```
   /usr/openv/volmgr/bin/set_ndmp_attr -auth patch root
   ```

   where `patch` is the host running the ndmpmoveragent daemon.

   (Refer to "Authorizing Access To the NDMP Host" on page 20 and "Verifying NDMP Password and/or Robot Connection" on page 23 for more information.)

3. Configure the drive(s) and/or robot that will be used for remote NDMP backups.

---

**Note** On the Add Robot display, under **Robot control**, select "Robot is controlled locally by this device host." This indicates that the robot is controlled by the media server, not by an NDMP host.

---



On Solaris, use the Berkeley-style no-rewind device name. For example: `patch:/dev/rmt/0cbn`.

where `patch` is the NetBackup media server where the ndmpmoveragent daemon is running.

On Windows, use the device name. For example: `ntpatch:Tape1`.

4. If the drive is in a robot, inventory the robot.

5. Create an NDMP-type storage unit. On the Add New Storage Unit display, specify the NetBackup media server as an NDMP host.

6. Create an NDMP-type policy. On the New / Change Policy display, be sure to specify the storage unit created at step 5.

# Port Number

The NDMP mover agent uses port 10000. It listens on this port for the NetBackup media server to attempt to connect to it.

# Using Scripts 6

This chapter explains how to customize the NDMP-specific notify scripts for use with NetBackup for NDMP.

**Note** Before using the notify scripts on UNIX, ensure that they are executable by *other*. Do this by executing `chmod 755` *script_name*, where *script_name* is the name of the script.

**Note** Windows systems must be running Windows NT 4.0 or higher to use these scripts.

NetBackup for NDMP provides the following scripts (commands on Windows NT/2000) for collecting information and providing notification of events.

Scripts to run on the NetBackup for NDMP server

| Scripts for UNIX | Scripts for Windows NT/2000 |
|---|---|
| ndmp_start_notify | ndmp_start_notify.cmd |
| ndmp_end_notify | ndmp_end_notify.cmd |
| ndmp_start_path_notify | ndmp_start_path_notify.cmd |
| ndmp_end_path_notify | ndmp_end_path_notify.cmd |
| ndmp_moving_path_notify | ndmp_moving_path_notify.cmd |

The scripts are similar to those already included in your NetBackup server installation. To create the scripts on UNIX, copy the `bpstart_notify` and `bpend_notify` scripts from

```
/usr/openv/netbackup/bin/goodies (UNIX)
```

to

```
/usr/openv/netbackup/bin
```

on the NetBackup for NDMP server. Then rename the copied scripts and modify as needed. On Windows, you must create the script from scratch.



## ndmp_start_notify (UNIX)

**Note** Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755` *script_name*. Where *script_name* is the name of the script.

On the UNIX media server, NetBackup calls the `ndmp_start_notify` script each time the client starts a backup operation. To use this script, create a script similar to

```
/usr/openv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/openv/netbackup/bin/ndmp_start_notify
```

on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

The `ndmp_start_notify` script executes each time a backup starts and after the tape has been positioned. This script must exit with a status of 0 for the calling program to continue and for the backup to proceed. A nonzero status causes the client backup to exit with a status of `ndmp_start_notify failed`.

If the `/usr/openv/netbackup/bin/ndmp_start_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an & character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server.

The default for `CLIENT_READ_TIMEOUT` is 300. If the script needs more time than 300 seconds, increase the value to allow more time.

NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| `$1` | Name of the NDMP host. |
| `$2` | Policy name from the NetBackup catalog |
| `$3` | Schedule name from the NetBackup catalog |

| Parameter | Description |
|---|---|
| $4 | One of the following:<br>FULL<br>INCR (differential incremental)<br>CINC (cumulative incremental) |
| $5 | The NetBackup status code for the operation |

For example:

```
ndmp_start_notify freddie cd4000s fulls FULL 0
ndmp_start_notify danr cd4000s incrementals INCR 0
ndmp_start_notify hare cd4000s fulls FULL 0
```

To create an ndmp_start_notify script for a specific policy or policy and schedule combination, create script files with a *.policyname* or *.policyname.schedulename* suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/openv/netbackup/bin/ndmp_start_notify.production
/usr/openv/netbackup/bin/ndmp_start_notify.production.fulls
```

The first script affects all scheduled backups in the policy named production. The second script affects scheduled backups in the policy named production only when the schedule is named fulls.

**Note** For a given backup, NetBackup uses only one ndmp_start_notify script and that is the one with the most specific name. For example, if there are both ndmp_start_notify.production and ndmp_start_notify.production.fulls scripts, NetBackup uses only ndmp_start_notify.production.fulls.

The ndmp_start_notify script can use the following environment variables:

```
BACKUPID
UNIXBACKUPTIME
BACKUPTIME
```

The NetBackup bptm process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
UNIXBACKUPTIME=0857340526
```



```
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

## ndmp_start_notify.cmd (Microsoft Windows)

For Windows NT/2000 NetBackup for NDMP media servers, you can create batch scripts that provide notification whenever the client starts a backup. These scripts must reside on the media server in the following directory:

*install_path*\NetBackup\bin

Where *install_path* is the directory where NetBackup is installed.

You can create ndmp_start_notify scripts that provide notification for all backups or just for backups of a specific policy or schedule. The ndmp_start_notify script executes each time a backup starts and after the tape has been positioned.

To create a script that applies to all backups, name the script:

*install_path*\netbackup\bin\ndmp_start_notify.cmd

To create an ndmp_start_notify script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- The following script applies only to a policy named *days*:

  *install_path*\netbackup\bin\ndmp_start_notify.days.cmd

- The following script applies only to a schedule named *fulls* that is in a policy named *days*:

  *install_path*\netbackup\bin\ndmp_start_notify.days.fulls.cmd

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one ndmp_start_notify script and checks for them in the following order:

ndmp_start_notify.*policy*.*schedule*.cmd

ndmp_start_notify.*policy*.cmd

ndmp_start_notify.cmd

For example, if there are both ndmp_start_notify.policy.cmd and ndmp_start_notify.policy.schedule.cmd scripts, NetBackup uses only the ndmp_start_notify.policy.schedule.cmd script.

**Note** If you are also using ndmp_end_notify scripts, they can provide a different level of notification than the ndmp_start_notify scripts. For example, if you had one of each, they could be ndmp_start_notify.policy.cmd and ndmp_end_notify.policy.schedule.cmd.

When the backup starts, NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| %1 | Name of the client from the NetBackup catalog. |
| %2 | Policy name from the NetBackup catalog. |
| %3 | Schedule name from the NetBackup catalog. |
| %4 | One of the following:<br>FULL<br>INCR<br>CINC |
| %5 | Status of the operation is always 0 for bpstart_notify. |
| %6 | Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.<br>If the script applies to a specific policy and schedule, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_NOTIFY_RES.*policy*.*schedule*<br>If the script applies to a specific policy, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_NOTIFY_RES.*policy*<br>If the script applies to all backups, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_NOTIFY_RES<br>An echo 0> %6 statement is one way for the script to create the file.<br>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful. |

The server expects the client to respond with a continue message within the period of time specified by the NetBackup CLIENT_READ_TIMEOUT option on the server. The default is 300 seconds. If the script needs more than 300 seconds, increase the value to allow more time.



## ndmp_end_notify (UNIX)

**Caution** The `ndmp_end_notify` script is executed at the end of the backup. The backup does not wait for the script to complete.

**Note** Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755` *script_name*, where *script_name* is the name of the script.

For a UNIX media server, if you need notification whenever the NDMP host completes a backup, copy

```
/usr/openv/netbackup/bin/goodies/bpend_notify
```

from the server, to

```
/usr/openv/netbackup/bin/ndmp_end_notify
```

on the UNIX NetBackup for NDMP host. Then, modify the script as desired, and ensure that you have execute permission.

The `ndmp_end_notify` script executes each time a backup completes.

NetBackup passes the following parameters to the `ndmp_end_notify` script:

| Parameter | Description |
|---|---|
| `$1` | Name of the client from the NetBackup catalog. |
| `$2` | Policy name from the NetBackup catalog. |
| `$3` | Schedule name from the NetBackup catalog. |
| `$4` | One of the following:<br>`FULL`<br>`INCR` (differential incremental)<br>`CINC` (cumulative incremental) |
| `$5` | Exit code from `bptm`. |

For example:

```
ndmp_end_notify freddie cd4000s fulls FULL 0
ndmp_end_notify danr cd4000s incrementals INCR 73
```

To create an ndmp_end_notify script for a specific policy or policy and schedule combination, create script files with a *.policyname* or *.policyname.schedulename* suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/openv/netbackup/bin/ndmp_end_notify.production
```

```
/usr/openv/netbackup/bin/ndmp_end_notify.production.fulls
```

The first script affects all scheduled backups in the policy named production. The second script affects scheduled backups in the policy named production only when the schedule is named fulls.

**Note** For a given backup, NetBackup uses only one ndmp_end_notify script and that is the one with the most specific name. For example, if there are both ndmp_end_notify.production and ndmp_end_notify.production.fulls scripts, NetBackup uses only ndmp_end_notify.production.fulls.

The ndmp_end_notify script can use the following environment variables:

```
BACKUPID
```

```
UNIXBACKUPTIME
```

```
BACKUPTIME
```

The NetBackup bptm process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
```

```
UNIXBACKUPTIME=0857340526
```

```
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

## ndmp_end_notify.cmd (Microsoft Windows)

For Windows NT/2000 media servers, you can create batch scripts that provide notification whenever the client completes a backup. These scripts must reside on the media server in the same directory as the NetBackup binaries:

*install_path*\NetBackup\bin

Where *install_path* is the directory where NetBackup is installed.

You can create ndmp_end_notify scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an ndmp_end_notify script that applies to all backups, name the script:



*install_path*\netbackup\bin\ndmp_end_notify.cmd

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- The following script applies only to a policy named *days*:

  *install_path*\netbackup\bin\ndmp_end_notify.days.cmd

- The following script applies only to a schedule named *fulls* that is in a policy named *days*:

  *install_path*\netbackup\bin\ndmp_end_notify.days.fulls.cmd

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one ndmp_end_notify script and checks for them in the following order:

ndmp_end_notify.*policy*.*schedule*.cmd

ndmp_end_notify.*policy*.cmd

ndmp_end_notify.cmd

For example, if there are both ndmp_end_notify.policy.cmd and ndmp_end_notify.policy.schedule.cmd scripts, NetBackup uses only ndmp_end_notify.policy.schedule.cmd.

**Note** If you are also using ndmp_start_notify scripts, they can provide a different level of notification than the ndmp_end_notify scripts. For example, if you had one of each, they could be ndmp_start_notify.policy.cmd and ndmp_end_notify.policy.schedule.cmd.

When the backup completes, NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| %1 | Name of the client from the NetBackup catalog. |
| %2 | Policy name from the NetBackup catalog. |
| %3 | Schedule name from the NetBackup catalog. |

| Parameter | Description |
|---|---|
| %4 | One of the following:<br>FULL<br>INCR<br>CINC |
| %5 | Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error. |
| Note: The following file is not checked at the end of a backup. | |
| %6 | Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.<br><br>If the script applies to a specific policy and schedule, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES.*policy*.*schedule*<br><br>If the script applies to a specific policy, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES.*policy*<br><br>If the script applies to all backups, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES<br><br>An `echo 0> %6` statement is one way for the script to create the file.<br><br>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful. |

## ndmp_start_path_notify (UNIX)

**Note** Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755` *script_name*, where *script_name* is the name of the script.



To use this script, create a script similar to

```
/usr/openv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/openv/netbackup/bin/ndmp_start_path_notify
```

on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

On the UNIX media server, the `ndmp_start_path_notify` script executes before the backup process is issued to the NAS machine. This script must exit with a status of 0 for the calling program to continue and for the backup to proceed. A nonzero status causes the client backup to exit with a status of 99 (NDMP backup failure).

If the `/usr/openv/netbackup/bin/ndmp_start_path_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an & character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup `CLIENT_READ_TIMEOUT` option on the server.

The default for `CLIENT_READ_TIMEOUT` is 300. If the script needs more time than 300 seconds, increase the value to allow more time.

NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| `$1` | Name of the NDMP host. |
| `$2` | Policy name from the NetBackup catalog. |
| `$3` | Schedule name from the NetBackup catalog |
| `$4` | One of the following:<br>`FULL`<br>`INCR` (differential incremental)<br>`CINC` (cumulative incremental) |
| `$5` | The NetBackup status code for the operation |
| `$6` | Not used. |
| `$7` | The path being backed up. |

For example:

```
ndmp_start_path_notify freddie cd4000s fulls FULL

ndmp_start_path_notify danr cd4000s incrementals INCR

ndmp_start_path_notify hare cd4000s fulls FULL
```

To create an `ndmp_start_path_notify` script for a specific policy or policy and schedule combination, create script files with a *.policyname* or *.policyname.schedulename* suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/openv/netbackup/bin/ndmp_start_path_notify.production

/usr/openv/netbackup/bin/ndmp_start_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named production. The second script affects scheduled backups in the policy named production only when the schedule is named fulls.

**Note** For a given backup, NetBackup uses only one `ndmp_start_path_notify` script and that is the one with the most specific name. For example, if there are both `ndmp_start_path_notify.production` and `ndmp_start_path_notify.production.fulls` scripts, NetBackup uses only `ndmp_start_path_notify.production.fulls`.

The `ndmp_start_path_notify` script can use the following environment variables:

```
BACKUPID

UNIXBACKUPTIME

BACKUPTIME
```

The NetBackup `bptm` process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526

UNIXBACKUPTIME=0857340526

BACKUPTIME=Sun Mar 2 16:08:46 1997
```

## ndmp_start_path_notify.cmd (Microsoft Windows)

For Windows NT/2000 media servers, you can create batch scripts that provide notification before the backup process is issued to the NAS machine. These scripts must reside on the media server in the same directory as the NetBackup binaries:

*install_path*`\NetBackup\bin`



Where *install_path* is the directory where NetBackup is installed.

You can create `ndmp_start_path_notify` scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an `ndmp_start_path_notify` script that applies to all backups, name the script:

*install_path*`\netbackup\bin\ndmp_start_path_notify.cmd`

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- The following script applies only to a policy named *days*:

  *install_path*`\netbackup\bin\ndmp_start_path_notify.days.cmd`

- The following script applies only to a schedule named *fulls* that is in a policy named *days*:

  *install_path*`\netbackup\bin\ndmp_start_path_notify.days.fulls.cmd`

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one `ndmp_start_path_notify` script and checks for them in the following order:

`ndmp_start_path_notify.`*policy*`.`*schedule*`.cmd`

`ndmp_start_path_notify.`*policy*`.cmd`

`ndmp_start_path_notify.cmd`

For example, if there are both `ndmp_start_path_notify.policy.cmd` and `ndmp_start_path_notify.policy.schedule.cmd` scripts, NetBackup uses only `ndmp_start_path_notify.policy.schedule.cmd`.

**Note** If you are also using `ndmp_start_notify` scripts, they can provide a different level of notification than the `ndmp_start_path_notify` scripts. For example, if you had one of each, they could be `ndmp_start_notify.policy.cmd` and `ndmp_start_path_notify.policy.schedule.cmd`.

When the backup starts, NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| `%1` | Name of the client from the NetBackup catalog. |
| `%2` | Policy name from the NetBackup catalog. |

| Parameter | Description |
|---|---|
| %3 | Schedule name from the NetBackup catalog. |
| %4 | One of the following:<br>FULL<br>INCR<br>CINC |
| %5 | Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error. |
| %6 | Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.<br><br>If the script applies to a specific policy and schedule, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_PATH_NOTIFY_RES.*policy*.*schedule*<br><br>If the script applies to a specific policy, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_PATH_NOTIFY_RES.*policy*<br><br>If the script applies to all backups, the results file must be named<br>*install_path*\netbackup\bin\NDMP_START_PATH_NOTIFY_RES<br><br>An echo 0> %6 statement is one way for the script to create the file.<br><br>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful. |
| %7 | Pathname being backed up. |



## ndmp_end_path_notify (UNIX)

**Note** Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755 script_name`, where *script_name* is the name of the script.

For a UNIX media server, if you need notification whenever the NDMP host completes a backup, copy

```
/usr/openv/netbackup/bin/goodies/bpend_notify
```

from the server, to

```
/usr/openv/netbackup/bin/ndmp_end_path_notify
```

on the UNIX NetBackup for NDMP host. Then, modify the script as desired, and ensure that you have execute permission.

The `ndmp_end_path_notify` script executes after the NAS machine has informed NetBackup that it has completed sending data.

NetBackup passes the following parameters to the `ndmp_end_notify` script:

| Parameter | Description |
|---|---|
| `$1` | Name of the client from the NetBackup catalog. |
| `$2` | Policy name from the NetBackup catalog. |
| `$3` | Schedule name from the NetBackup catalog. |
| `$4` | One of the following:<br>`FULL`<br>`INCR` (differential incremental)<br>`CINC` (cumulative incremental) |
| `$5` | Exit code from `bptm`. |
| `$6` | Not used. |
| `$7` | The path being backed up. |

For example:

```
ndmp_end_path_notify freddie cd4000s fulls FULL 0
ndmp_end_path_notify danr cd4000s incrementals INCR 73
```

To create an ndmp_end_path_notify script for a specific policy or policy and schedule combination, create script files with a *.policyname* or *.policyname.schedulename* suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/openv/netbackup/bin/ndmp_end_path_notify.production
```

```
/usr/openv/netbackup/bin/ndmp_end_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named production. The second script affects scheduled backups in the policy named production only when the schedule is named fulls.

**Note** For a given backup, NetBackup uses only one ndmp_end_path_notify script and that is the one with the most specific name. For example, if there are both ndmp_end_path_notify.production and ndmp_end_path_notify.production.fulls scripts, NetBackup uses only ndmp_end_path_notify.production.fulls.

The ndmp_end_path_notify script can use the following environment variables:

```
BACKUPID
```

```
UNIXBACKUPTIME
```

```
BACKUPTIME
```

The NetBackup bptm process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526
```

```
UNIXBACKUPTIME=0857340526
```

```
BACKUPTIME=Sun Mar 2 16:08:46 1997
```

## ndmp_end_path_notify.cmd (Microsoft Windows)

For Windows NT/2000 media servers, you can create batch scripts that provide notification whenever the client is finished writing to tape. These scripts must reside on the media server in the same directory as the NetBackup binaries:

*install_path*\NetBackup\bin

Where *install_path* is the directory where NetBackup is installed.

You can create ndmp_end_path_notify scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an ndmp_end_path_notify script that applies to all backups, name the script:



*install_path*\netbackup\bin\ndmp_end_path_notify.cmd

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- The following script applies only to a policy named *days*:

  *install_path*\netbackup\bin\ndmp_end_path_notify.days.cmd

- The following script applies only to a schedule named *fulls* that is in a policy named *days*:

  *install_path*\netbackup\bin\ndmp_end_path_notify.days.fulls.cmd

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one ndmp_end_path_notify script and checks for them in the following order:

ndmp_end_path_notify.*policy*.*schedule*.cmd

ndmp_end_path_notify.*policy*.cmd

ndmp_end_path_notify.cmd

For example, if there are both ndmp_end_path_notify.policy.cmd and ndmp_end_path_notify.policy.schedule.cmd scripts, NetBackup uses only ndmp_end_path_notify.policy.schedule.cmd.

**Note** If you are also using ndmp_end_notify scripts, they can provide a different level of notification than the ndmp_end_path_notify scripts. For example, if you had one of each, they could be ndmp_end_notify.policy.cmd and ndmp_end_path_notify.policy.schedule.cmd.

When the backup completes, NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| %1 | Name of the client from the NetBackup catalog. |
| %2 | Policy name from the NetBackup catalog. |
| %3 | Schedule name from the NetBackup catalog. |

| Parameter | Description |
|---|---|
| %4 | One of the following:<br>FULL<br>INCR<br>CINC |
| %5 | Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error. |
| Note: The following file is not checked when using ndmp_end_path_notify. | |
| %6 | Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.<br><br>If the script applies to a specific policy and schedule, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_PATH_NOTIFY_RES.*policy*.*schedule*<br><br>If the script applies to a specific policy, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_PATH_NOTIFY_RES.*policy*<br><br>If the script applies to all backups, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_PATH_NOTIFY_RES<br><br>An echo 0> %6 statement is one way for the script to create the file.<br><br>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful. |
| %7 | Pathname being backed up. |



## ndmp_moving_path_notify (UNIX)

**Note** Before using this script, ensure that it is executable by *other* on the media server. Do this by executing `chmod 755` *script_name*, where *script_name* is the name of the script.

To use this script, create a script similar to

```
/usr/openv/netbackup/bin/goodies/bpstart_notify
```

on the server, and copy it to

```
/usr/openv/netbackup/bin/ndmp_moving_path_notify
```

on the UNIX NetBackup for NDMP server. Then, modify the script as desired and ensure that you have execute permission.

On UNIX media servers, the `ndmp_moving_path_notify` script executes once the backup process has sent data to NetBackup.

If the `/usr/openv/netbackup/bin/ndmp_moving_path_notify` script exists, it executes in the foreground and the `bptm` process on the NetBackup for NDMP server waits for it to complete before continuing. Any commands in the script that do not end with an & character execute serially.

The server expects the client to respond with a `continue` message within the period of time specified by the NetBackup CLIENT_READ_TIMEOUT option on the server.

The default for CLIENT_READ_TIMEOUT is 300 seconds. If the script needs more than 300 seconds, increase the value to allow more time.

NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| `$1` | Name of the NDMP host. |
| `$2` | Policy name from the NetBackup catalog. |
| `$3` | Schedule name from the NetBackup catalog |
| `$4` | One of the following:<br>`FULL`<br>`INCR` (differential incremental)<br>`CINC` (cumulative incremental) |
| `$5` | The NetBackup status code for the operation. |

| Parameter | Description |
|---|---|
| $6 | Not used. |
| $7 | The path being backed up. |

For example:

```
ndmp_moving_path_notify freddie cd4000s fulls FULL

ndmp_moving_path_notify danr cd4000s incrementals INCR

ndmp_moving_path_notify hare cd4000s fulls FULL
```

To create an ndmp_moving_path_notify script for a specific policy or policy and schedule combination, create script files with a *.policyname* or *.policyname.schedulename* suffix. The following are two examples of script names for a policy named *production* that has a schedule named *fulls*:

```
/usr/openv/netbackup/bin/ndmp_moving_path_notify.production

/usr/openv/netbackup/bin/ndmp_moving_path_notify.production.fulls
```

The first script affects all scheduled backups in the policy named production. The second script affects scheduled backups in the policy named production only when the schedule is named fulls.

**Note** For a given backup, NetBackup uses only one ndmp_moving_path_notify script and that is the one with the most specific name. For example, if there are both ndmp_moving_path_notify.production and ndmp_moving_path_notify.production.fulls scripts, NetBackup uses only ndmp_moving_path_notify.production.fulls.

The ndmp_moving_path_notify script can use the following environment variables:

```
BACKUPID

UNIXBACKUPTIME

BACKUPTIME
```

The NetBackup bptm process creates these variables. The following are examples of strings that are available to the script for use in recording information about a backup:

```
BACKUPID=freddie_0857340526

UNIXBACKUPTIME=0857340526

BACKUPTIME=Sun Mar 2 16:08:46 1997
```



## ndmp_moving_path_notify.cmd (Microsoft Windows)

For Windows NT/2000 media servers, you can create batch scripts that provide notification whenever the NAS machine starts sending data. These scripts must reside on the media server in the same directory as the NetBackup binaries:

*install_path*\NetBackup\bin

Where *install_path* is the directory where NetBackup is installed.

You can create ndmp_moving_path_notify scripts that provide notification for all backups or just for backups of a specific policy or schedule.

To create an ndmp_moving_path_notify script that applies to all backups, name the script:

*install_path*\netbackup\bin\ndmp_moving_path_notify.cmd

To create a script that applies only to a specific policy or policy and schedule combination, add a *.policyname* or *.policyname.schedulename* suffix to the script name.

- The following script applies only to a policy named *days*:

  *install_path*\netbackup\bin\ndmp_moving_path_notify.days.cmd

- The following script applies only to a schedule named *fulls* that is in a policy named *days*:

  *install_path*\netbackup\bin\ndmp_moving_path_notify.days.fulls.cmd

The first script affects all scheduled backups in the policy named days. The second script affects scheduled backups in the policy named days only when the schedule is named fulls.

For a given backup, NetBackup calls only one ndmp_moving_path_notify script and checks for them in the following order:

ndmp_moving_path_notify.*policy*.*schedule*.cmd

ndmp_moving_path_notify.*policy*.cmd

ndmp_moving_path_notify.cmd

For example, if there are both ndmp_moving_path_notify.policy.cmd and ndmp_moving_path_notify.policy.schedule.cmd scripts, NetBackup uses only ndmp_moving_path_notify.policy.schedule.cmd.

**Note** If you are also using ndmp_start_notify scripts, they can provide a different level of notification than the ndmp_moving_path_notify scripts. For example, if you had one of each, they could be ndmp_start_notify.policy.cmd and ndmp_moving_path_notify.policy.schedule.cmd.

When the backup starts, NetBackup passes the following parameters to the script:

| Parameter | Description |
|---|---|
| %1 | Name of the client from the NetBackup catalog. |
| %2 | Policy name from the NetBackup catalog. |
| %3 | Schedule name from the NetBackup catalog. |
| %4 | One of the following:<br>FULL<br>INCR<br>CINC |
| %5 | Status of the operation and is same as sent to the NetBackup server. This is 0 for successful backups and 1 for partially successful backups. If an error occurs, the status is the value associated with that error. |
| Note: The following file is not checked when using ndmp_moving_path_notify. | |
| %6 | Results file that NetBackup checks for a return code from the script. NetBackup uses %6 to pass the file name and then expects the script to create the file in the same directory as the script.<br><br>If the script applies to a specific policy and schedule, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES.*policy*.*schedule*<br><br>If the script applies to a specific policy, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES.*policy*<br><br>If the script applies to all backups, the results file must be named<br>*install_path*\netbackup\bin\NDMP_END_NOTIFY_RES<br><br>An echo 0> %6 statement is one way for the script to create the file.<br><br>NetBackup deletes the existing results file before calling the script. After the script executes, NetBackup checks the new results file for the status. The status must be 0 for the script to be considered successful. If the results file does not exist, NetBackup assumes that the script was successful. |



| Parameter | Description |
| --- | --- |
| %7 | Pathname being backed up. |

# NetBackup for NDMP Commands A

This appendix describes the `set_ndmp_attr` and mover agent commands, which are specific to the NetBackup for NDMP product.

The following are special conventions used in the command descriptions.

- Brackets [ ] mean that the enclosed command line component is optional. For example, assume that a command has the following format:

  ```
  command [arg1]
  ```

  The user can either choose `arg1` or omit it.

- A vertical bar (or pipe) symbol | separates optional arguments. For example:

  ```
  command [arg1 | arg2]
  ```

  The user can choose `arg1` or `arg2` (not both), or can omit both.

- Italics indicate that the information is user supplied. For example, the user supplies a value for *directory* in the following command:

  `-client_libraries` *directory*



# set_ndmp_attr

## NAME

set_ndmp_attr - authorizes access and sets configuration values for NDMP attached robots.

On Windows NT/2000 systems: *install_path*\Volmgr\bin\set_ndmp_attr

On UNIX systems: /usr/openv/volmgr/bin/set_ndmp_attr

## SYNOPSIS

The set_ndmp_attr command can take any of the following sets of parameters as a single line. Two or more sets can be combined into one line (see Example 4).

```
set_ndmp_attr [-insert | -update | -delete | -display] -auth
          [ndmp-server-host] [user-name] [password]

set_ndmp_attr [-insert | -update | -delete | -display] -robot
          [ndmp-server-host] [robot-device] [scsi-controller scsi-id scsi-lun]

set_ndmp_attr -verify [ndmp-server-host]

set_ndmp_attr [-list | -l]

set_ndmp_attr [-list_compact | -lc]
```

## DESCRIPTION

Authorizes access and sets configuration values for robots attached to an NDMP host, and places them into the NDMP configuration database.

## OPTIONS

-insert (optional)
: Allows user to insert a new authorize access entry or a new robot (must be used with -auth or -robot).

-update (optional)
: Updates an NDMP entry (must be used with -auth or -robot).

-delete (optional)
: Deletes an NDMP entry (must be used with -auth or -robot).

-display (optional)
: Displays an NDMP entry (must be used with -auth or -robot).

-auth
: Creates an entry to allow access to an NDMP client.

-robot
: Sets the configuration values for an NDMP-attached robot.

`-verify` Verifies that the NetBackup for NDMP server has access to the NDMP host. If a robot is configured on the NDMP host, this option verifies access to the robot.

`-list or -l` (optional)
Lists the current entries in the NDMP configuration database.

`-list_compact or -lc` (optional)
Lists a short version of the NDMP configuration database.

**Note** If none of the following (`-insert`, `-update`, `-delete`, or `-display`) precedes the options `-robot` or `-auth`, the default is to either insert or update, depending on whether the host or robot already exists.

## EXAMPLES

Example 1: Setting the authorization of an NDMP client

```
set_ndmp_attr -insert -auth stripes root
Passwd:XXXXX
Passwd:XXXXX
```

Example 2: Setting the configuration values for a robot attached to an NDMP client. The robot is on control 2, SCSI-ID 3, and LUN 0.

```
set_ndmp_attr -insert -robot stripes c2t3l0 2 3 0
```

Example 3: Running a verify

```
set_ndmp_attr -verify
Verify Host name: stripe
```

Result of example 3:

```
Verify Host name: stripes
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
  host supports MD5 authentication
Getting MD5 challenge from host...
Logging in using MD5 method...
```



```
Login was successful
Opening SCSI device "c2t3l0"...
Setting SCSI target controller 2 id 3 lun 0...
Inquiry result is "HP      C5173-7000      3.04"
```

Example of failed verification due to incorrect password:

```
Connecting to host "stripes" as user "root"...
Waiting for connect notification message...
Opening session with NDMP protocol version 2...
Host info is:
  host name "stripes"
  os type "SunOS"
  os version "5.8"
  host id "80dd14ba"
  host supports TEXT authentication
Logging in using TEXT method...
ndmp_connect_client_auth failed
set_ndmp_attr: host "stripes" failed
set_ndmp_attr: unable to continue
```

Example 4: This shows several sets of parameters combined

```
set_ndmp_attr -auth stripes root -robot stripes c2t3l0 2 3 0 -verify stripes
```

# ndmpmoveragent

## NAME

ndmpmoveragent.start - starts the NDMP mover agent daemon (ndmpmoveragent) on the NetBackup media server (UNIX).

ndmpmoveragent.stop - stops the NDMP mover agent daemon (ndmpmoveragent) on the NetBackup media server (UNIX).

## SYNOPSIS

```
/usr/openv/volmgr/bin/ndmpmoveragent.start [-h | -install |
        -noinstall] [-noprint]

/usr/openv/volmgr/bin/ndmpmoveragent.stop [-h | -remove |
        -noremove] [-noprint]
```

## DESCRIPTION

The ndmpmoveragent daemon is a separate process that acts as an NDMP server in a type of three-way backup called Remote NDMP. This daemon only runs with NDMP version V2, but can back up NDMP hosts that are running with NDMP version V2, V3, and V4. This daemon must be launched by means of the ndmpmoveragent.start script, and stopped by the ndmpmoveragent.stop script. These scripts automatically install an initialization script that restarts/stops the daemon when the system is rebooted.

The ndmpmoveragent command is for UNIX systems only. See InstallNdmpMoverAgent for the Windows NT/2000 equivalent.

## OPTIONS

`-h`
: Print these instructions.

`-install`
: Install the initialization script.

`-noinstall`
: Do not install the initialization script.

`-noprint`
: Do not print status messages.

`-remove`
: Remove initialization script.

`-noremove`
: Do not remove initialization script.



### NOTES

For `ndmpmoveragent.start`: if neither `-install` nor `-noinstall` is specified (and the initialization script is not already installed), the user will be prompted to install the initialization script.

If you answer yes when prompted, a sample initialization script located in `/usr/openv/volmgr/bin/goodies/ndmpmover` is installed in `/etc/init.d/ndmpmover`, with links from `/etc/rc0.d/K78ndmpmover` and `/etc/rc2.d/S76ndmpmover`.

For `ndmpmoveragent.stop`: if neither `-remove` nor `-noremove` is specified (and the initialization script is installed), the user will be prompted to remove the script. Removing the script will prevent the `ndmpmoveragent` daemon from being restarted when the system is rebooted.

# InstallNdmpMoverAgent

## NAME

`InstallNdmpMoverAgent` - installs or removes the NDMP Mover Agent service on the NetBackup media server (Windows NT/2000).

## SYNOPSIS

*install_path*`\netbackup\bin\InstallNdmpMoverAgent [-r]` | *PathName* [*Logon*]

## DESCRIPTION

The NDMP Mover Agent service acts as an NDMP server in a type of three-way backup called Remote NDMP. This service only runs with NDMP version V2, but can back up NDMP hosts that are running with NDMP version V2, V3, and V4. On the NetBackup media server, the `InstallNdmpMoverAgent` command installs or removes the NDMP Mover Agent service, and starts/stops this service.

`InstallNdmpMoverAgent` is for Windows NT/2000 systems only. See `ndmpmoveragent` for the UNIX equivalent.

## OPTIONS

`-r`

Remove the NDMP mover agent service.

*PathName*

Directory (full path) where NetBackup binaries are located. This is required, unless -r option is specified.

For example, `C:\Program Files\Veritas\Volmgr\bin`

Note: If the path includes a space, the path must be enclosed by double quotes.

*Logon*

Username for authentication to the NDMP host. The user is then prompted for an authentication password.

The username and password are not related to system user logons: any values can be used. If no logon is provided, logon/password are not verified. If logon is provided but no password, logon is verified but password is not.

You must use the `set_ndmp_attr` command to configure these values:
`set_ndmp_attr -auth` *ndmp-server-host user-name password*



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